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WILDLIFE REVIEW

NUMBER 104 DECEMBER 1961

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor.

NATURAL RESOURCES & CLIMATE

Geagan, Bill. A PLAN FOR THE ALLAGASH. Natl. Parks Magazine 35(168): 4-7, 19. 6 figs. Sept. 1961. WR 104: 2

The Allagash region in Maine faces possible destruction from 3 sources: flooding for electrical power, excessive logging and road building, and the gradual invasion of private and commercial camps. A summary is presented of the work which has been and is being done to convert this area to a national recreation area.--Stephen V. Goddard.

SOILS

Bailey, Oran F., and others. SOIL SURVEY OF JACKSON COUNTY, OKLAHOMA. SCS, Ser. 1958, no. 4. i + 67 p., 24 figs. + folded maps based on aerial photos and bound in. June 1961. Sold by Supt. Documents. WR 104: 2

Bullard, L. E., and others. SOIL SURVEY OF DODGE COUNTY, MINNESOTA. SCS, Ser. 1956, no. 19. i + 113 p., 17 figs. + folded maps based on aerial photos and bound in. Aug. 1961. Sold by Supt. Documents. WR 104: 2

Harlin, William V., and others. SOIL SURVEY OF CALHOUN COUNTY, ALABAMA. SCS, Ser. 1958. no. 9. i + 97 p., 7 figs. + folded maps based on aerial photos and bound in. Sept. 1961. Sold by Supt. Documents. WR 104: 2

Meinders, Hadley C., and others. SOIL SURVEY OF TEXAS COUNTY, OKLAHOMA. SCS, Ser. 1958, no. 6. i + 60 p., 21 figs. + folded maps based on aerial photos and bound in. July 1961. Sold by Supt. Documents. WR 104: 2

Morris, W. M., and others. SOIL SURVEY OF WASHINGTON COUNTY, MISSISSIPPI. SCS, Ser. 1958, no. 3. i + 57 p., 6 figs. + folded maps based on aerial photos and bound in. May 1961. Sold by Supt. Documents. WR 104: 2

Mowery, Irvin C., and others. SOIL SURVEY OF HASKELL COUNTY, TEXAS. SCS, Ser. 1958, no. 8. i + 74 p., 14 figs. + single-fold maps based on aerial photos and bound in. Mar. 1961. Sold by Supt. Documents. WR 104: 2

Retzer, J. L., and others. SOIL SURVEY OF TROUT CREEK WATERSHED, COLORADO. SCS, Ser. 1958, no. 5. i + 48 p., 14 figs. + folded maps based on aerial photos and bound in. May 1961. Sold by Supt. Documents. WR 104: 2

Robinson, Glenn H., and others. SOIL SURVEY OF GRANT COUNTY, WISCONSIN. SCS, Ser. 1951, no. 10. i + 98 p., 14 figs. + folded maps based on aerial photos and bound in. June 1961. Sold by Supt. Documents. WR 104: 2

Striker, M. M., and others. SOIL SURVEY OF LENAWEE COUNTY, MICHIGAN. SCS, Ser. 1947, no. 10. i + 62 p., 1 fig. + single-fold maps based on aerial photos and bound in. Aug. 1961. Sold by Supt. Documents. WR 104: 2

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Cook, Paxon W. LITERATURE CITATIONS IN PUBLICATIONS OF THE FISH AND WILDLIFE SERVICE. F&WS Circ. 115. ii + 18 p. 1961. WR 104: 2

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Cypert, Eugene. (F&WS, Waycross, Ga.) THE EFFECTS OF FIRES IN THE OKEFENOKEE SWAMP IN 1954 AND 1955. Am. Midland Nat. 66(2): 485-503, 5 figs. Oct. 1961. WR 104: 2

"Recurrent droughts and fires have long played an important part in the ecology of the swamp as is evidenced by charred stumps embedded in the peat and by charcoal deposits several feet below the surface. Five major fires between July 1954 and June 1955 burned over about 318,000 acres of the swamp and 140,000 acres of adjacent upland. Most of the swamp was lightly or moderately burned. Severe burns were spotty. Coppice growth is rapidly

replacing the timber which was killed in the more severely burned areas. The numbers of otters, raccoons, snakes and most fish were drastically reduced during the drought. Alligators, sandhill cranes, herons, waterfowl and bears were not adversely affected and some of these may have actually been favored." --From auth. abstr.

Fisser, H. G. (Univ. Wyo., Laramie.) VARIABLE PLOT, SQUARE FOOT PLOT, AND VISUAL ESTIMATE FOR SHRUB CROWN COVER MEASUREMENTS. J. Range Mgmt. 14(4): 202-207, 4 figs. July 1961. WR 104: 3

Izdebski, Krystyn. BADANIA FITOSOCJOLOGICZNE I FLORYSTYCZNE W REZERWACIE STAWSKA GÓRA POD CHEŁMEM. [PHYTOSOCIOLOGICAL AND FLORISTIC STUDIES IN THE NATURE RESERVATION STAWSKA GORA NEAR CHELM.] Ann. Univ. Mariae Curie-Skłodowska, Sec. C. Biol. 13(3): 213-230, illus. 1958. [From Biol. Abstr. 36(20), 1961.] WR 104: 3

Phytosociological sketches of the Carex humilis-Inula ensifolia plant association of Stawska Gora. This work contains detailed reports on the physiognomy, ecology, and phytosociological composition of the association. [In Polish.]--From abstr.

Palley, Marshall N., and W. G. O'Regan. (Univ. Calif., Berkeley.) A COMPUTER TECHNIQUE FOR THE STUDY OF FOREST SAMPLING METHODS. Forest Sci. 7(3): 282-294, 4 figs. Sept. 1961. WR 104: 3

Describes the development and some applications of a procedure for the empirical study of forest sampling methods with the aid of an electronic computer. The procedure was developed with particular reference to Bitterlich's point sampling and Strand's line sampling methods but the techniques developed may be useful in evaluating other methods of forest sampling.

Sharp, Ward M., and Henry H. Chisman. (Pa. State Univ., University Park.) FLOWERING AND FRUITING IN THE WHITE OAKS. I. STAMINATE FLOWERING THROUGH POLLEN DISPERSAL. Ecology 42(2): 365-372, 4 figs. Apr. 1961. WR 104: 3

Observations on catkin development from the time of emergence through ripening and dispersal of the pollen are reported. The chestnut oak, scrub chestnut oak, and the burr oak showed no seasonal variation in time interval of flowering, but in the white oak there were 3 distinct periods of catkin emergence. Complete pollen dissemination from a tree required only a few hours in the scrub chestnut oak to about 3 days in the white oak. Periods of prolonged, wet, rainy weather postponed pollen shedding. Factors detrimental to male flowering and pollen dispersal were dry desiccating winds and killing freezes.--From auth. summ.

Vinogradov, B. V. [USE OF PLANTS AS INDICATORS IN DECIPHERING AIRPHOTOGRAPHS OF DESERT AREAS OF WEST TURKMENIA.] Vsesoyuzn. Geog. Obshch. Izv. 93 (1): 69-76. Jan./Feb. 1961. [From Bibliog. Agr. 25(7), 1961.] WR 104: 3

In Russian.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Bird, R. D. ECOLOGY OF THE ASPEN PARKLAND OF WESTERN CANADA IN RELATION TO LAND USE. Publ. Dept. Agr. Canada no. 1066. x + 155 p. + 3 maps. 57 photos. 1961. $3.00. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 14 Aug. 1961.] WR 104: 3

Two hundred references. An account of the original conditions and changes in plant and animal ecology that have taken place since white settlement of the Prairie Provinces as a result of hunting, fire, cultivation, etc. The aspen parkland lies between the great plains and the boreal forest. The land is in many places poorly drained and covered with small bodies of water. On the drier parts, grassland and aspen-dominated forest are intermixed.--Courtesy/ Frank M. Johnson.

Gillett, George W., John Thomas Howell, and Hans Leschke. (Mich. State Univ., East Lansing.) A FLORA OF LASSEN VOLCANIC NATIONAL PARK, CALIFORNIA. Madroño J. Biol. 19(1): 1-185, 3 figs. Spring 1961. WR 104: 3

PLANTS--FLORAS, COMMUNITIES, TAXONOMY--Continued

Good, E. E. (Ohio State Univ., Columbus.) THE ORIGINAL VEGETATION OF VAN WERT COUNTY, OHIO. Ohio J. Sci. 61(3): 155-160, illus. 1961. WR 104: 4
Descriptions are given of the Lake Plain Forest, Wet Beech Forest, Beech-Maple Forest, Forest of the Fort Wayne Moraine, Beach Ridges, and treeless areas with notes on changes which have occurred and present conditions.--R. W. Dexter.

Lindsey, Alton A., Robert O. Petty, David K. Sterling, and Willard Van Asdall. (Purdue Univ., Lafayette, Ind.) VEGETATION AND ENVIRONMENT ALONG THE WABASH AND TIPPECANOE RIVERS. Ecol. Monographs 31(2): 105-156, 49 figs. Apr. 1961. WR 104: 4

Ogden, J. Gordon, III. (Ohio Wesleyan Univ., Delaware.) FOREST HISTORY OF MARTHA'S VINEYARD, MASSACHUSETTS. 1. MODERN AND PRE-COLONIAL FORESTS. Am. Midland Nat. 66(2): 417-430. Oct. 1961. WR 104: 4
"There is no evidence to show that the early colonists found forests substantially different from those found in the area today. There is some evidence that the trees the colonists found may have been considerably larger with a higher canopy."--From auth. abstr.

Wiggins, Ira L. (Stanford Univ., Stanford, Calif.) THE ORIGIN AND RELATIONSHIPS OF THE LAND FLORA [SYMPOSIUM: THE BIOGEOGRAPHY OF BAJA CALIFORNIA AND ADJACENT SEAS / PART III. TERRESTRIAL AND FRESH-WATER BIOTAS]. Systematic Zool. 9(3/4): 148-165, 11 figs. Sept.-Dec. 1960. WR 104: 4
The 3 modern floral complexes (the Californian in the Northwest, the Cape region, and the Central Desert) are described in detail. The 7 major phytogeographic areas from which the elements in the present day flora have been derived are discussed and migration routes are illustrated. Paleobotanical evidence shows that the peninsula was probably a much warmer, moister climate in the early tertiary than now exists and the plant population has not yet reached equilibrium with the environmental factors.--Mary F. Myers.

PLANTS--FOREST SURVEYS

Stone, Robert N., and Harry W. Thorne. (Lake States Forest Expt. Sta., Univ. Minn., St. Paul.) WISCONSIN'S FOREST RESOURCES. Lake States Forest Expt. Sta. Paper no. 90. iv + 52 p., 40 figs. + unnumbered photos. Aug. 1961. WR 104: 4
A culmination of several years' effort by the Wisconsin Conservation Department and the Lake States Forest Experiment Station working with other agencies concerned with Wisconsin's timber resources. It contains the latest available information on the status of forest lands and timber growth and presents some indications of future productivity that may be expected.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Society of Systematic Zoology. SYMPOSIUM: THE BIOGEOGRAPHY OF BAJA CALIFORNIA AND ADJACENT SEAS. PART II. MARINE BIOTAS. PART III. TERRESTRIAL AND FRESH-WATER BIOTAS. Systematic Zool. 9(3/4): 93-232, illus. Sept.-Dec. 1960. WR 104: 4
A symposium of the Pacific Section of the Society of Systematic Zoology was held 16-17 June 1959, at San Diego, Calif. The symposium is divided into 3 parts: Part I in Systematic Zool. 9(2), June 1960, covers the geologic history of Baja California and its marine faunas; Part II contains 1 paper of some interest to biologists, entitled The marine vertebrates of the Outer Coast. It covers the distributional pattern of the fish, birds, reptiles, and mammals of the area. Four papers of special interest from Part III are listed separately in WR. They are: The origins and relationships of the land flora, Ira T. Wiggins; An analysis of the recent land mammals, Robert T. Orr; The composition and origin of the avifauna, Kenneth E. Stager; and Evolution of a peninsular herpetofauna, Jay M. Savage.--Mary F. Myers.

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Mörzer Bruijns, M. F. (R.I.V.O.N., Bilthoven, Netherlands.) OVER VOGELBESCHERMING, MANGOESTES EN BEREN IN ITALIË. [ON BIRD PROTECTION, THE MONGOOSE AND THE BEAR IN ITALY.] De Levende Natuur 64(3): 61-64. 1961. WR 104: 5
In Dutch.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Matthews, L. Harrison. (Zool. Soc., London, England.) HIBERNATION IN MAMMALS AND BIRDS. In: HYPOTHERMIA AND THE EFFECTS OF COLD. Brit. Med. Bull. 17(1): 9-13. 1961. [From Biol. Abstr. 36(17), 1961.] WR 104: 5
A brief review is presented of the subject and the more recent work published upon it. The following aspects of the subject are included: activity during hibernation, physiological changes in mammals during hibernation, onset of hibernation of mammals, arousal of mammals from hibernation, and hibernation in birds.

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Klimstra, W. D. (Southern Ill. Univ., Carbondale.) LACK OF AUTHORITATIVE DATA CLOUDS PESTICIDE-WILDLIFE PICTURE. Agr. Chem. 16(9): 14-16, 143-144. Sept. 1961. WR 104: 5
The following information was gathered from a survey of literature, correspondence, and questionnaires: there have been few satisfactory studies to determine the effects of pesticides on wild mammals; there are few studies under way or planned; there have been studies of effects on laboratory mammals; there is cooperation between conservation and agriculture departments in the opinion of less than 50% of the conservation departments, but of 90% of the agriculture departments; there is a desire for stricter federal regulations by 96% of the state conservation departments, but only 36% of the state agriculture departments and 18% of the chemical companies; pesticide use is still in the experimental stage; sometimes irresponsible use has been condoned by state and federal agencies; ecologists have been amiss in not making efforts to appraise the side effects of rodenticides and herbicides.--John L. George.

Reydellet, M. LES PRODUITS CHIMIQUES UTILISÉS EN AGRICULTURE. [CHEMICAL PRODUCTS USED IN AGRICULTURE.] Arnhem. Inst. v. Toegepast Biol. Onderz. in de Nat. Meded. 50: 96-113. 1960. [From Bibliog. Agr. 22(9), 1961.] WR 104: 5
[In French] with "English summary. Toxicity of economic poisons to wildlife. Includes discussion."

Wilson, Curtis T. SOME EFFECTS OF THE FIRE ANT CONTROL PROGRAM ON WILDLIFE POPULATION IN DECATUR COUNTY, GEORGIA. M.S. thesis, Univ. Ga. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 5

WILDLIFE--PARASITES & DISEASES

Baer, J. G. (Univ. Neufchâtel, Neufchâtel, Switzerland.) HELMINTHES PARASITES. Exploration des Parcs Nationaux de Congo Belges. Mission J. G. Baer - W. Gerber (1958) Brussels. Fasc. 1. 163 p. 1959. [Long abstr. in Helminthol. Abstr. 30(2), 1961.] WR 104: 5

Borg, Karl. (State Vet. Med. Inst., Stockholm, Sweden.) TOXOPLASMOSIS IN WILDLIFE IN SWEDEN. Trans. 26th N. A. Wildl. Conf. p. 219-229, 2 figs. 1961. WR 104: 5
About 10,850 indigenous wild animals representing about 40 spp. of mammals and 120 spp. of birds were checked during 15 yrs. of research on wildlife pathology in Sweden. Toxoplasmosis was demonstrated in Lepus timidus, L. europaeus, Tetrao urogallus, Lyrurus tetrix, Phasianus colchicus, and Pandion haliaëtus. [Toxoplasmosis has been reported in roe deer.] As in man, dogs and rats, the frequency of the infection has been found higher in ♀♀ than in ♂♂ in the hares and capercaillie. Incidence is higher in the autumn months in common hares and capercaillie.

Byrne, R. J., F. M. Hetrick, J. E. Scanlon, J. W. Hastings, and L. N. Locke. (Univ. Md., College Park.) OBSERVATIONS ON EASTERN EQUINE ENCEPHALITIS IN MARYLAND IN 1959. J. Am. Vet. Med. Assoc. 139(6): 661-664. 15 Sept. 1961. WR 104: 6

Hanson, Robert P. (Univ. Wis., Madison.) WILD ANIMAL RESERVOIRS AND EPIDEMIOLOGY. Wildl. Disease no. 14. 13 p., 2 pls. 23 Oct. 1961. WR 104: 6

[Numbers 13, 14, 15 and 16 on one microcard.] A wild animal should be considered a reservoir of an infection transmissible to man and livestock only when it has been shown that the infection is communicable in nature. It should be demonstrated that the parasite can be eliminated by the wild animal in such a manner that man and livestock are infected. Control of infectious disease in wild animals is now possible in a few instances and, with further study, may become practical in many situations. Reduction or elimination of a wild animal population that is a reservoir of disease should be considered only when it is known that the species is the sole or major source of infection of an important disease of man or livestock. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

Herman, Carlton M. (Patuxent Wildl. Res. Center, Laurel, Md.) EPIZOOTICS IN WILD ANIMALS IN RELATION TO POPULATIONS. Wildl. Disease no. 13. 9 p. 23 Oct. 1961. WR 104: 6

[Numbers 13, 14, 15 and 16 on one microcard.] To recognize the occurrence of epizootics it is of prime necessity to develop new terminology and techniques for study of epizootics that will better fit current limitations of censusing total populations, mortality and morbidity of wild animal species. To diagnose the cause of an epizootic, losses must be evident at the time the disease is occurring, trained personnel and adequate facilities must be available, and specimens must be collected in a manner to make diagnosis possible. Studies should include consideration of the interrelationships between different species, including man and other animals, as well as the relationships of physiology, nutrition, population density, and other ecological factors involving host and habitat. Greatest progress is to be made in long-range studies on specific diseases or host complexes under both normal conditions and when disease outbreaks occur. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

McLean, Donald M. (Res. Inst., Hospital for Sick Children, Toronto, Canada.) ARTHROPOD-BORNE ENCEPHALITIS IN ONTARIO. Wildl. Disease no. 18. 8 p. 23 Oct. 1961. WR 104: 6

[Numbers 17, 18, 19 and 20 on one microcard.] In the Powassan area, neutralizing antibody to Powassan virus was detected in sera from 5 of 23 chipmunks and 2 of 14 squirrels tested, and it was found in sera from 42 other mammals and 15 birds. All 17 snowshoe hares tested were infested with Haemaphysalis leporis-palustris (HLP) ticks, and 2 of 14 squirrels neither of which had Powassan antibody, neutralizing antibody to Powassan virus was detected in sera from 5 of 178 snowshoe hares, virtually all of which carried HLP ticks, 2 of 18 chipmunks and 3 of 56 squirrels, but it was not detected in 91 other mammalian sera. Virtually all snowshoe hares carried HLP ticks and 14 squirrels carried Ixodes spp. ticks. Although it appears likely that squirrels and chipmunks are important natural reservoirs of Powassan virus, the means by which virus is transmitted to man in the field requires further investigation. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

Urquhart, G. M., D. Hay, D. R. P. Zaphiro, and C. A. Spinage. SOME INTERNAL PARASITES OF GAME ANIMALS IN KENYA. East African Agr. & Forestry J. 26(1): 11-20. July 1960. [From Bibliog. Agr. 25(8), 1961.] WR 104: 6

WILDLIFE--POPULATIONS & FLUCTUATIONS

Welch, Bruce L., and Peter H. Klopfer. (Duke Univ., Durham, N. C.) ENDOCRINE VARIABILITY AS A FACTOR IN THE REGULATION OF POPULATION DENSITY. Am. Nat. 95(883): 256-260, 1 fig. July-Aug. 1961. WR 104: 7

There are 2 predominant kinds of psychosocially influenced endocrine responses to crowding which oppose each other in the effect that they produce on the population. First, the adrenal weight increases throughout the population. This produces a greater physiological homogeneity of the population and increases the possibility of a large portion of the population suffering the consequences of acute hyperfunction. Second, this tendency is opposed by the increasing number of deviant individuals whose death will precede the others, thereby reducing the population density and the likelihood of a major population crash.--Stephen V. Goddard.

WILDLIFE--BIOMETRICS

Jolicoeur, Pierre, and James E. Mosimann. (Univ. Chicago, Chicago, Ill.) SIZE AND SHAPE VARIATION IN THE PAINTED TURTLE. A PRINCIPAL COMPONENT ANALYSIS. Growth 24: 339-354, 6 figs. 1960. WR 104: 7

Summary: The applicability of principal component analysis to size and shape variation in living organisms is illustrated by a study of male and female painted turtles. Numerical and geometrical aspects are discussed in detail and it is concluded that principal component analysis of size and shape variation would be appropriate in relative growth studies whenever multiple biometrical characters are considered.

LeClerg, E. L. (Agr. Res. Serv., USDA, Beltsville, Md.) EXPERIMENTAL STATISTICS AND ANIMAL DISEASE RESEARCH. J. Am. Vet. Med. Assoc. 139(5): 567-573, 1 fig. 1 Sept. 1961. WR 104: 7

WILDLIFE--TECHNIQUES

Buechner, Helmut K., A. M. Harthoorn, and John A. Lock. THE IMMOBILIZATION OF WILD ANIMALS AS AN AID TO MANAGEMENT AND CONTROL. Oryx 5(6): 346-351. Nov. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 7

Flyger, Vagn. (Inst. Nat. Res. Univ. Md., Annapolis.) HANDLING WILD ANIMALS WITH A NEW TRANQUILIZER. Trans. 26th N. A. Wildl. Conf. p. 230-233. 1961. WR 104: 7

Chlordiazepoxide when given parenterally or orally at the rate of 30 to 40 mg/kg of body weight will usually make an animal docile enough to handle barehanded. Test animals included: raccoon, skunk, gray fox, feral cat, woodchuck, gray squirrel, white-footed mouse, cottontail, and varying hare.

Heuschele, Werne P. (San Diego Zoo, San Diego, Calif.) CHLORDIAZEPOXIDE FOR CALMING ZOO ANIMALS. J. Am. Vet. Med. Assoc. 139(9): 996-998. 1961. WR 104: 7

Summary: Chlordiazepoxide produced satisfactory calming of 18 out of 22 aggressive or frightened zoo animals. No evidence of toxicity was observed at dose levels used.

Howard, Walter E., and Elbert M. Brock. (Univ. Calif., Davis.) A DRIFT-FENCE PIT TRAP THAT PRESERVES CAPTURED RODENTS. J. Mammal. 42(3): 386-391, 1 fig., 1 pl. Aug. 1961. WR 104: 7

Abstract: The efficiency of lead fences of hardware cloth to direct rodents into funnel traps is discussed; a new type of pit trap that excludes birds and automatically preserves captured rodents is described. Rodents entering the trap fall through a trap door into a gallon jar containing alcohol. The pit traps primarily catch dispersing rodents; resident populations do not appear to be destroyed. Each pit trap yielded 2.5 to 45 times as many rodents as did Sherman live traps set for only 1 night.

Peterle, Tony J. (Ohio Coop. Wildl. Res. Unit, Columbus 10.) THE HUNTER--WHO IS HE? Trans. 26th N. A. Wildl. Conf. p. 254-266, 5 figs. 1961. WR 104: 8

A mailed survey was used to sample 6,810 Ohio hunting license buyers (slightly over 1% of all 1959 licensed hunters in the state). A return of 3,616 questionnaires was obtained by using four follow-up letters mailed to 6,029 deliverable addresses. Based on an anticipated return of 4,000, the cost per returned questionnaire amounts to $1.00. This preliminary tabulation of data from the 200 questions was based on a sample of 1,100 randomly selected returns, and, as a consequence, no statistical treatment of the data is presented. The composition of the Ohio hunting population was described giving age, sex, marital status, education, earnings, place of birth, occupation, race, armed forces experience, employment status, and size of family. Additional information was presented concerning the hunter's attitudes, social life, and hunting experience. A few possible distinctions between types of hunters are briefly stated. Based on a small sub-sample of the total, some differences between hunters and those who buy a license and do not hunt are suggested. A statistical analysis of the data is planned following personal interviews of a selected sample of non-respondents and the publication of the U. S. Bureau of Census data for 1960.--Auth. abstr.

Priklonskii, S. G. [AUTOMATIC BOWS USED IN CATCHING BIRDS.] Zool. Zhur. 39(4): 623-624. 1960. [From Biol. Abstr. 36(18), 1961, from Referat. Zhur. (Biol.), 1961, no. 1D574.] WR 104: 8

Translation [from Russian]. Original with English summary. Automatic bows for catching birds were used in the Oksk reservation in 1956-1957. The bow is composed of a frame (a butt and a mobile shaft) made of a 3 mm zinc-coated wire of 50-60 cm diameter (for catching birds of rooks' size). A 1.4-1.6 mm steel spring is attached to the frame. A net made of 0.5 mm string forming 20 mm meshes is dressed on the bow. About 1000 birds (10 species), 400 of which were snipe, were caught with this device; and lapwings, larks, stermins [?], and other birds were caught with the automatic bow in their nests. Pine finches were successfully caught; and bog-owls, hen-harriers, and buteos, came to the bait (in this case the bow was made in a rectangular form, 60 x 75 cm, of a 5 mm wire).

Stains, Howard J., James Ozment, and Arthur Lippoldt. (Southern Ill. Univ., Carbondale.) AN ELECTRIC FENCE ENCLOSURE FOR SMALL MAMMALS. J. Mammal. 42(3): 391-395, 1 fig., 1 pl. Aug. 1961. WR 104: 8

Abstract: A screen-wire fence topped on each side by an electric fence shows promise as a method of restricting small mammals to an area for study. Such a fence constructed around one acre should take 3 men less than 1 day to assemble, and at a cost of approximately $150, discounting labor.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Osborn, Katherine H., Ray A. Yoder, and William I. West. FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES / SUPPLEMENT JULY 1959--JUNE 1960 INCLUDING ADDITIONS FOR JULY 1958--JUNE 1959. Forest Sci. 7 (3): 295-304. Sept. 1961. WR 104: 8

Author and subject indices are appended to this list of 176 forestry theses (arranged by institution).

Skalon, V. N. [TASKS OF COMMERCIAL HUNTING IN THE LIGHT OF THE DECISIONS OF THE 21ST. CONGRESS OF THE COMMUNIST PARTY OF THE SOVIET UNION.] Zool. Zhur. 38(8): 1121-1127. 1959. [From Biol. Abstr. 36(21), 1961, from Referat. Zhur., Biol., 1961, no. 6D18.] WR 104: 8

Translation [from Russian]. Original with English summary. After enumerating the advantages of commercial hunting to the future development of the USSR national economy and the current deficiencies of commercial hunting in the USSR, the author presents a general plan for the organization of hunting, "and the preservation of the resources for users within the framework of hunting enterprises. This will make possible the growth of hunting cadres. The principal types of hunting should be commercial hunting and hunting for sport. The training of highly qualified hunting cadres must be strengthened and the qualification of those presently engaged in hunting must be raised."

Smith, Donald J. A GAME HABITAT STUDY ON IDLEWILD EXPERIMENT STATION, EAST FELICIANA PARISH, LOUISIANA. M.S. thesis, La. State Univ. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 9

Taber, Richard D. (Mont. State Univ., Missoula.) WILDLIFE ADMINISTRATION AND HARVEST IN POLAND. J. Wildl. Mgmt. 25(4): 353-363, 1 fig. Oct. 1961. WR 104: 9

Poland with 77 million acres of land has 65% in farms, 23% in forest, and 8% in marsh. Hunting and management are derived from the system of estates and aristocratic hunting traditions. There are 37,000 licensed hunters (0.12% of the population) of whom 7,000 also have deer licenses. Hunting is on the basis of 4,500 management units each leased for 10 years, managed and hunted by a definite hunting circle of 10 to 50 members. Statistics for kill and export are given, and some comparisons are made with West Germany and the United States.--From summ.

WILDLIFE--HUNTING AREAS & PROBLEMS

Berryman, Jack H. (Utah State Univ., Logan.) THE RESPONSIBILITY OF STATE AGENCIES IN MANAGING HUNTING ON PRIVATE LANDS. Trans. 26th N. A. Wildl. Conf. p. 285-297. 1961. WR 104: 9

Conclusion: "State agencies have a responsibility for providing public hunting on private lands and also for the larger and more important task of developing the full potential of the wildlife resource for the use, enjoyment and benefit of all segments of society. To discharge this responsibility will require the development and implementation of a new and positive philosophy. To accept less is to allow public hunting to go by default and to miss the opportunity for developing a uniquely American system of wildlife resource management."

Dickey, Charley. (Sportsmen's Service Bureau, 250 E. 43rd St., New York 17, N. Y.) THE FUTURE ROLE OF SHOOTING PRESERVES. Trans. 26th N. A. Wildl. Conf. p. 247-253. 1961. WR 104: 9

The writer reviews past growth of shooting preserves in the nation. There are now one or more shooting preserves within easy driving distance of nearly every major population center in the United States. The author predicts a steady increase in shooting preserves open to the public during the next decade. He predicts a faster growth rate for private shooting preserves. New techniques for handling pen-reared birds have been developed by preserve operators for sporty shooting. The author feels that shooting preserves and fee fishing ponds will become the centers for outdoor family recreation during the next decade with many accompanying facilities such as riding, swimming, rifle ranges, bird-watching areas, etc. Author reviews state commission regulations which should be considered to take care of future growth of preserves. Article concludes with summary "...it is fully apparent that state and Federal agencies can use a helping hand from private enterprise in meeting our future hunting and fishing needs."--Auth. abstr.

Kirikov, S. V., and Yu. A. Isakov. THE RESERVES OF WILD GAME; THE DYNAMICS OF HUNTING AND ITS PROSPECTS. Soviet Geog.: Rev. & Transl. 1(10): 64-90. Dec. 1960. WR 104: 9

A summary of the histories of several fur-bearers, big game animals, and game birds (upland and waterfowl) in Russia. The factors which have brought about the decline of these animals and what must be done to preserve this valuable resource for the future are discussed.--Stephen V. Goddard.

McDermott, R. E., and Leon S. Minckler. (Pa. State Univ., University Park.) SHOOTING AREA MANAGEMENT OF PIN OAK. Trans. 26th N. A. Wildl. Conf. p. 111-121, 1 fig. 1961. WR 104: 9

An analysis was made of mast production in young, pure stands of pin oak for duck shooting area management in southeastern Mo. for the period 1956-9. Mast production under flooded shooting area conditions and unflooded conditions was compared in conjunction with varying levels of stand stocking and structure. Flooding as a phase of shooting area development results in more mast production

and does not appear to be deleterious to pin oak stand maintenance. Reduction of basal areas of pin oak is an acceptable management practice for both mast and timber production objectives.--R. E. McDermott.

Miller, Don. PENNSYLVANIANS ARE HUNTERS. Pa. Game News 32(9): 10-13, 2 figs. Sept. 1961. WR 104: 10

More than two-thirds of the hunters purchasing a 1959 Pa. hunting license for the first time were under 20 years of age, and these first-time license sales made up about 7% of the total license sales.--Stephen V. Goddard.

Toschi, A., E. Bassini, and O. Cervi. (Univ. Bologna, Italy.) INDAGINI STATISTICHE ED ECOLOGICHE SUI TERRITORI VINCOLATI A PROTEZIONE DELLA SELVAGGINA. [STATISTICAL AND ECOLOGICAL INVESTIGATIONS OF TERRITORY DEVOTED TO THE PROTECTION OF WILDLIFE.] Ricerche di Zool. Applicata alla Caccia (Bologna) 33: 1-63. 1960. WR 104: 10

In Italian with summaries in English, French, and German. The number and total area of game preserves, refuges, and public hunting areas for the Italian provinces are summarized and tabulated. A comparison is made between areas where hunting is prohibited and those where controlled hunting is practiced. "The ecological and faunistic conditions have been examined and discussed."--From summ.

Whitlock, Stanley C. (Mich. Dept. Conserv., Lansing.) PROBLEMS FACING STATE AGENCIES IN FARM-GAME HABITAT MANAGEMENT. Trans. 26th N. A. Wildl. Conf. p. 281-285. 1961. WR 104: 10

The question is raised concerning the biological value of statewide or large area habitat improvement programs for small game. The past history and impetus for such campaigns by state conservation agencies are briefly reviewed. Various factors, such as finances, public reaction, etc., are discussed. Results of a questionnaire sent to 19 states in the pheasant and northern bobwhite range indicate there is general agreement that biologically significant habitat improvement programs over large areas are financially impossible. Research has not demonstrated their value. Modification of such programs to fit smaller areas is suggested as an alternative. The New York, Pennsylvania, and Michigan's "Williamston" plans for small game habitat improvement are discussed. The New York and Pennsylvania plans are believed to offer the most promise of success.--Auth. abstr.

Williamson, Leslie A. REGULATED PRIVATE SHOOTING PRESERVES IN CONNECTICUT. Modern Game Breeding 31(8): 15-17, 21. Aug. 1961. WR 104: 10

There were 26 shooting preserves operating in Conn. during the 1960-61 season, an increase of over 400% from the 5 preserves which were in operation during the 1933-34 season. Brief discussions are presented on the history of shooting preserves in Conn. and the possible development of more preserves to help provide Conn. sportsmen with more places to hunt. Preserves fall into 3 general classifications: (1) those operated by an individual for his own enjoyment; (2) those operated by a group of individuals as clubs; and (3) those operated as commercial enterprises.--Stephen V. Goddard.

WILDLIFE--ECONOMIC & OTHER VALUES

Dykstra, W. W. (F&WS, Washington 25, D. C.) FOOD CONTAMINATION BY RODENTS AND BIRDS. Cereal Sci. Today 4(10): 303-304. 1959. [From Biol. Abstr. 36 (16), 1961.] WR 104: 10

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Inukai, T. HARMFUL RODENTS OF THE FOREST AND THEIR CONTROL IN JAPAN. Intern. Congr. Crop Protection Proc. 4(2): 1333-1334. 1957 [1960]. [From Bibliog. Agr. 25(8), 1961.] WR 104: 10

"Poisons for voles and repellents for hares."

Kepner, R. A., W. E. Howard, M. W. Cummings, and E. M. Brock. U.C. MECHANICAL GOPHER-BAIT APPLICATOR / CONSTRUCTION AND USE. Univ. Calif. Agr. Ext. Serv., Publ. AXT-32. 12 p., illus. [1961.] WR 104: 11
Details of construction, burrow depth and spacing, baits and application rates, and the operation of a mechanical gopher-bait applicator are given.

RANGELAND & WILDLIFE

Biswell, H. H., and J. H. Gilman. (Univ. Calif., Berkeley.) BRUSH MANAGEMENT IN RELATION TO FIRE AND OTHER ENVIRONMENTAL FACTORS ON THE TEHAMA DEER WINTER RANGE. Calif. Fish & Game 47(4): 357-389, 19 figs. Oct. 1961. WR 104: 11
Summary: Studies of browse conditions and reproduction in relation to fire and other environmental factors were made on the Tehama deer winter range over a period of 12 years. Fire resulted in more brush seedlings and sprouts and better range for deer. However, fire must be used judiciously or the non-sprouting species will be diminished in abundance and the carrying capacity may be decreased. In the absence of fire, a few to many brush seedlings emerged in different years, but nearly all died. Mortality was mainly caused by plant competition. Other factors of less importance were frost heaving, browsing by deer, cutting by rabbits and rodents, and defoliation by grasshoppers and quail. Research is needed on methods of reducing competition to increase brush seedling survival, and on other means of increasing browse for deer.

McCulloch, Clay Y., Jr. (Okla. Coop. Wildl. Res. Unit, Stillwater.) EFFECTS OF RODENTS AND RABBITS ON ESTIMATES OF FORAGE DISAPPEARANCE. Proc. Okla. Acad. Sci. 39: 202-204. 1959. WR 104: 11
Summary: Forage production and disappearance estimates suggested that annually much forage is removed by factors other than cattle. The estimates are made on paired plots, one grazed by cattle and one protected by a large-mesh wire cage. In 1957 a 33% difference occurred between estimates on the paired plots in the same pastures, where neither set was grazed by cattle. It was proposed that cages might deter small mammals. Trapping results and other observations showed that forage inventory cages were not effective barriers to the common rodent species, nor to many of the rabbits. It is suggested that little of the noted discrepancy of 1957 was due to barring of rodents and rabbits by large-mesh wire cages.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Bencze, L. [NUTRIENT ANALYSIS OF FOREST IN RELATION TO WILDLIFE FEEDING.] Erdo 10(4): 139-145. Apr. 1961. [From Bibliog. Agr. 25(8), 1961.] WR 104: 11
In Hungarian.

Entrican, Alex R. DEVELOPMENT OF THE EXOTIC-FOREST RESOURCE AS A MAJOR LAND USE. New Zealand Forest Serv., Inf. Ser. no. 32. 11 p. 1960. WR 104: 11
(1) Exotic forestry should play a much larger part in the national economy; (2) the objective should be to increase the present export allocation of 50 million cubic feet of raw materials to 150 million cubic feet annually; (3) the pulp and paper industry must be developed so that it can compete on the world market both as to price and quality; and (4) exotic forests be managed and tended to attain both quality and quantity production in the interest of producing as wide a diversity of products as possible.--From auth. concl.

Finland. HIRVIVAHINKOKOMITEAN MIETINTÖ. [FOREST INJURIES AND PROTECTION.] Silva Fennica 106: 1-57, illus., maps. 1960. [From Polar Record 10(69), 1961.] WR 104: 11
[In Finnish.] "Summary in English. Report of Committee on damage to growing forest by moose [Alces alces]. Includes north Finland."

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE--Continued

Koskimies, J. [THE ROLE OF BIRDS AND MAMMALS IN THE LIFE OF FORESTS.] Metsataloudellinen Aikakauslehti 1: 14-19. 1961. [From Bibliog. Agr. 25(8), 1961.] WR 104: 12

In Finnish with English summary.

Turček, F. J. NIEKTORÉ ASPEKTY VZTAHOV VTACTVA, HMYZU A DREVÍN Z HL'ADISKA BIOLOGICKEJ OCHRANY LESA. [SOME ASPECTS OF THE INTERRELATIONSHIPS OF BIRDS, INSECTS AND TREES, FROM THE POINT OF VIEW OF BIOLOGICAL PROTECTION OF THE FOREST.] Ved. Práce Výskum. Úst. Lesn. Hosp. (Banská, Štiavnica, Czech.) no. 1. p. 259-280. 1960. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 14 Aug. 1961.] WR 104: 12

In Slovak with Russian and English summaries. Includes 42 references.--Courtesy/ Frank M. Johnson.

CONTROL OF VEGETATION WITH HERBICIDES ETC.

Frank, P. A., N. E. Otto, and T. R. Bartley. (Agr. Res. Serv., USDA, Denver, Colo.) TECHNIQUES FOR EVALUATING AQUATIC WEED HERBICIDES. Weeds 9(4): 515-521. Oct. 1961. WR 104: 12

Summary: Techniques for evaluation of aquatic weed herbicides are reported. The standing-water test consisted of placing representative species of submersed aquatic weeds in 20-liter glass containers with solutions of the compound under test. Observations were made for 4 weeks. Compounds that exhibited high activity in the standing-water test were subjected to a limited-contact test. After 30-minute exposures to the test solutions in flowing water, the plants were removed from the canal, rinsed, and placed in fresh water for 4 weeks. Seven of the eight chemicals evaluated showed high activity in the standing-water test at 100 ppm and three showed high activity at 50 ppm. Only four of the eight herbicides were effective in the limited-contact test.

Hall, T. F. PRINCIPLES OF AQUATIC PLANT CONTROL. Advances in Pest Control Res. 4: 211-247, illus. 1961. [From Biol. Abstr. 36(18), 1961.] WR 104: 12

Recent developments are reviewed. There are 19 references.

Mascia, Vincent. CHEMICAL METHODS OF WEED CONTROL IN RESERVOIRS. J. New England Water Works Assoc. 74(3): 185-188. Sept. 1960. [From Public Health Eng. Abstr. 41(8), 1961.] WR 104: 12

Shallow areas in reservoirs where aquatic vegetation (such as milfoil, wild celery, pondweed, cattails, and pond lilies) is in abundance usually impart various tastes and odors to the water. A chemical (Benoclor 3) was developed to control these weeds. The method of application and doses used in 2 successful trials are presented in the text.--From abstr. by K. A. Dostal.

Sluder, Earl R. (SE Forest Expt. Sta., Asheville, N. C.) EXPLORATORY STUDIES ON CHEMICAL CONTROL OF UNWANTED HARDWOODS IN THE SOUTHERN APPALACHIANS. SE Forest Expt. Sta., Res. Notes no. 165. 2 p. Nov. 1961. WR 104: 12

A 3-year test of the effects of 2,4,5-T, sodium arsenite, Fenuron and Trysben on red maple, sourwood, hickory, rhododendron and laurel. Stem kill was good for the first two chemicals and there was no sprouting of 2,4,5-T-treated stumps. Sprouting, however, was heavy on those treated with sodium arsenite. The 2 soil sterilants, Fenuron and Trysben, had no effect on laurel and rhododendron at any application rate tested. (Rates as high as 100 pounds per acre were used.)

MAMMALS--GENERAL

Pitts, Grover C. A STUDY OF GROSS BODY COMPOSITION OF SMALL ALASKAN MAMMALS AS COMPARED WITH THOSE FROM THE TEMPERATE ZONE. 1. Arctic Aeromed. Lab. (Ladd Air Force Base, Alaska) Tech. Rept. 57-46. 13 p. 1960. [From Polar Record 10(69), 1961.] WR 104: 12

MAMMALS--GENERAL--Continued

Salt, R. W. (Canada Agr. Res. Sta., Lethbridge, Alberta.) RESISTANCE OF POIKILOTHERMIC ANIMALS TO COLD. In: HYPOTHERMIA AND THE EFFECTS OF COLD. Brit. Med. Bull. 17(1): 5-8. 1961. [From Biol. Abstr. 36(17), 1961.] WR 104: 13

MAMMALS--FAUNAS AND MANUALS

Anderson, Sydney. MAMMALS OF MESA VERDE NATIONAL PARK, COLORADO. Univ. Kans. Publ. Museum Nat. Hist. 14(3): 29-67, 3 figs. + 2 pls. 24 July 1961. WR 104: 13

Brief accounts are given for 54 species of mammals collected or seen in Mesa Verde National Park. The 47 species from the Mesa Verde that are not exclusively boreal make up 87% of the mammalian fauna. Most of these are wide-spread species and are more abundant in the deserts or other lowlands.--Stephen V. Goddard.

Banfield, A. W. F. (Natl. Museum Canada, Ottawa, Ontario.) NOTES ON THE MAMMALS OF THE KLUANE GAME SANCTUARY, YUKON TERRITORY. Natl. Museum Canada Bull. no. 172, Contrib. Zool., 1959. p. 128-135. 17 Apr. 1961. WR 104: 13

A list of mammals with annotations as to their status and distribution.

Kulik, I. L., and N. A. Nikitina. [SMALL MAMMALS OF THE FOREST ZONE OF KOMI A.S.S.R.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(6): 3-16. 1960. [From Polar Record 10(69), 1961.] WR 104: 13

[In Russian.] "Distributions, habitat, behaviour, based on field work in 1958-59."

Mumford, Russell Eugene. THE MAMMALS OF INDIANA -- HISTORY AND CURRENT STATUS. Ph.D. thesis, Purdue Univ. 301 p. 1961. [From Dissertation Abstr. 22(1), 1961.] WR 104: 13

Approximately 1,200 mammal specimens were collected from 62 of the 92 Indiana counties between July 1958 and July 1960. For each of the 52 species of mammals now found in Indiana, information on the following aspects is brought up to date and summarized: a synonymy of scientific names formerly applied to Indiana forms, weights, measurements, pelage coloration, past history, present status and distribution, life history and ecology, economic importance, and list of Indiana subspecies. The known distribution of each species in Indiana is shown by an outline map which has been modified to show the counties from which specimens have been preserved.--Stephen V. Goddard.

Orr, Robert T. (Univ. San Francisco, San Francisco, Calif.) AN ANALYSIS OF THE RECENT LAND MAMMALS [SYMPOSIUM: THE BIOGEOGRAPHY OF BAJA CALIFORNIA AND ADJACENT SEAS / PART III. TERRESTRIAL AND FRESH-WATER BIOTAS]. Systematic Zool. 9(3/4): 171-179. Sept.-Dec. 1960. WR 104: 13

The land mammals of Baja California appear to be largely of northern origin due to the long separation of the main body of the peninsula from the North American continent. Climatic fluctuations have resulted in ecologic isolation of certain species and in some cases, specific differentiation. Isolation has been a major factor influencing the high degree of endemism found.--Mary F. Myers.

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Brown, L. N., and C. H. Conaway. (Univ. Mo., Columbia.) DYE EXCRETION AS A METHOD FOR DETERMINATION OF SMALL MAMMAL HOME RANGES. Am. Midland Nat. 66 (1): 128-137, 1 fig. July 1961. WR 104: 13

One hundred and twenty dyes and biological stains were tested in the laboratory for possible use in determining home ranges by excreted dyes. In field tests, home ranges calculated from the excreted dye spots corresponded closely to home ranges calculated from live trapping data for the same animals (using minimum area method).--From auth. abstr.

Delany, M. J. (Univ. Southampton, England.) THE ECOLOGICAL DISTRIBUTION OF SMALL MAMMALS IN NORTH-WEST SCOTLAND. Proc. Zool. Soc. London 137(1): 107-126, 1 fig. July 1961. WR 104: 14

Dunaway, Paul B., and Stephen V. Kaye. (Oak Ridge Natl. Lab., Oak Ridge, Tenn.) STUDIES OF SMALL-MAMMAL POPULATIONS ON THE RADIOACTIVE WHITE OAK LAKE BED. Trans. 26th N. A. Wildl. Conf. p. 167-185, 6 figs. 1961. WR 104: 14

Populations of small mammals were studied on the vegetated radioactive bed of former White Oak Lake and on an uncontaminated old field. More species and a greater total number of small mammals were present in later successional stages than in earlier stages. Cotton rats, Sigmodon hispidus komareki, are used as an example for discussion of population dynamics. The populations of cotton rats on both study areas were exterminated during the severe winter of 1959-60. Greatest trapping success on the lake bed was in the summers. Males moved farther than ♀♀ during all seasons, and the movements of both sexes were greater during the warmer months of the year. Significantly more ♂♂ than ♀♀ were caught at the lake bed. More ♀♀ than ♂♂ were trapped from late spring or summer to late fall or early winter, while more ♂♂ were captured during the remaining times. The reproductive season occurred mainly from about April to Oct. Strontium-90 was the most abundant radioisotope in the tissues although this radioisotope was least abundant in the soil. Effects of atomic radiation were not detected.--From auth. abstr.

McKeever, Sturgis. (Univ. Calif., Davis.) RELATIVE POPULATIONS OF SMALL MAMMALS IN THREE FOREST TYPES OF NORTHEASTERN CALIFORNIA. Ecology 42(2): 399-402, 2 figs. Apr. 1961. WR 104: 14

From Jan. through Dec. 1958, small mammal populations were studied in 3 forest types in northeastern Calif. and the relative abundance of 12 species was computed. Predominant species were: Peromyscus maniculatus, Citellus lateralis, Eutamias speciosus, E. amoenus, E. townsendi, Tamiasciurus douglasi, and Glaucomys sabrinus. Peromyscus maniculatus, Eutamias spp., and Citellus lateralis were most abundant in open stands of ponderosa pine. Tamiasciurus douglasi was most abundant in lodgepole pine. Glaucomys sabrinus populations were approximately the same in each of the 3 forest types.--From auth. summ.

Wing, Leonard W. (3875 Vorhies Rd., Ann Arbor, Mich.) THE 3.864-YEAR LEMMING CYCLE AND LATITUDINAL PASSAGE IN TEMPERATURE. J. Cycle Res. 10(2): 59-70, 53 figs. Apr. 1961. WR 104: 14

Abstract: The wave length of the dominant cycle in lemming abundance is recalibrated and established at 3.864 years. Tests of solar (sunspot) and geophysical (temperature) data show that this cycle influences all. It occurs also in the tree ring record used. The behavior with respect to the 3.864-year wave length demonstrates latitudinal passage. The conclusion is inescapable that a cycle pulse of 3.864 years, unknown though its identity may be, passes over the solar and terrestrial spheres, simultaneously equatorward from the two polar regions. While this pulse is powerful in the lemmings, it is rather minor in temperature. The influence upon lemming numbers would seem to be in some way other than through meteorological elements.

MAMMALS--PARASITES AND DISEASES

Berezantsev, Yu. A. [THE IMPORTANCE OF RODENTS AND INSECTIVOROUS MAMMALS IN THE MAINTENANCE OF NATURAL FOCI OF TRICHINOSIS.] Zool. Zhur. 39(6): 832-837. 1960. [From Biol. Abstr. 36(19), 1961, from Referat. Zhur. (Biol.), 1961, no. 5E146.] WR 104: 14

Translation [from Russian]. Original with English summary. The interrelationships of the feeding habits of carnivorous animals, insectivorous animals and rodents as vectors of trichinosis under natural conditions are analyzed. The source of microfoci among rodents and insectivorous animals is the carcasses of infected animals. Among 628 moles studied in 1956, no trichinosis was found. Field studies on the infection of moles from infected carcasses of small animals buried near the molehills, produced negative results. The author attributes a definite epizootological role, in the natural focus of trichinosis, to the shrews and especially to the murine rodents, which are the main objects of food for many carnivorous animals.

Clark, L. G., J. I. Kresse, E. A. Carbrey, R. R. Marshak, and C. J. Hollister. (Univ. Pa., New Bolton Center, Kennett Square.) LEPTOSPIROSIS IN CATTLE AND WILDLIFE ON A PENNSYLVANIA FARM. J. Am. Vet. Med. Assoc. 139(8): 889-891. 15 Oct. 1961. WR 104: 15

During the course of an epizootiologic study of leptospirosis on a farm in southeastern Pennsylvania, an unusual serotype pattern among the cattle and wildlife was demonstrated. Leptospira hadlo was isolated from a cow. A total of 101 wildlife specimens of 12 species was checked. Of the 12 spp. represented, 6 (raccoon, opossum, skunk, muskrat, common mouse, and gray fox) yielded a total of 11 isolates. L. ballum was isolated from opossum, L. pomona was isolated from skunk, and L. icterohaemorrhagiae was isolated from raccoon, muskrat, mouse, and gray fox.

Jellison, W. L., R. Drouhet, G. Segretain, M. L'Heritier, and F. Petter. ADIASPIROMYCOSE (HAPLOMYCOSE) CHEZ LES MAMMIFÈRES SAUVAGES EN FRANCE. [HAPLOMYCOSIS IN WILD MAMMALS IN FRANCE.] Ann. Inst. Pasteur 100: 745-752. 1961. [From Vet. Bull. 31(10), 1961.] WR 104: 15

[In French] with summary in English. Emmonsia crescens was detected in the lungs of 2 shrews, 2 moles, and 6 voles of 2 spp. in France.--From abstr. by M.G.G.

Jellison, William L., Cora R. Owen, J. Frederick Bell, and Glen M. Kohls. (Rocky Mountain Lab., Hamilton, Montana.) TULAREMIA AND ANIMAL POPULATIONS: ECOLOGY AND EPIZOOTIOLOGY. Wildl. Disease no. 17. 22 p., 7 figs. 23 Oct. 1961. WR 104: 15

[Numbers 17, 18, 19 and 20 on one microcard.] There are two kinds of tularemia in North America that can be distinguished by epidemiological pattern and virulence of isolates: (a) tick-borne tularemia of rabbits (Lagomorpha) which frequently affects man and other animals and may be transmitted by arthropods other than ticks, and (b) water-borne tularemia of true rodents (Rodentia) which also affects other animals and is the source of some human infections. The tularemia of Europe and Asia, which is seldom fatal to man, is comparable to type b above. The genus Sylvilagus is of first importance as a reservoir for tularemia. Jack rabbits of several species are of secondary importance, but snowshoe rabbits, Lepus americanus, are a very minor source of human infection. It is probable that tularemia is a minor factor in the biology of L. americanus. Epizootic tularemia is common in range sheep in western United States and Canada. One small outbreak has been reported in range horses. Devastating epizootics in muskrats and beavers are associated with contaminated water. Epizootics in voles are attributed to water and to transmission by cannibalism. Cultures from beavers, muskrats and voles are consistently of low virulence: small doses of inoculum do not produce fatal infections in domestic rabbits. No human fatality is attributed to infection from these 3 rodents in North America. This type of tularemia is comparable to that prevalent in Europe and Asia. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

Karstad, Lars. (Ontario Vet. Coll., Guelph.) REPTILES AS POSSIBLE RESERVOIR HOSTS FOR EASTERN ENCEPHALITIS VIRUS. Trans. 26th N. A. Wildl. Conf. p. 186-202, 1 fig. 1961. WR 104: 15

During the period June 1960 to Jan. 1961, blood samples obtained from 99 reptiles (28 species) collected in the vicinity of the Okefenokee Swamp, Ga., were tested for the presence of eastern encephalitis virus (EEV) and neutralizing antibodies to the virus. Virus was not isolated. The serological survey revealed neutralizing antibody in 7 animals (5 snakes of 3 species, 1 turtle, and 1 alligator). Experimentally induced infections studied in 56 animals of 21 species confirmed the susceptibility of reptiles to EEV and showed also that large quantities of virus frequently circulated in the blood stream for relatively long periods of time. Thus it was concluded that reptiles should be considered as potential reservoir hosts for the virus, perhaps permitting the over-winter survival of EEV within enzootic areas.--Auth. abstr.

Roth, Earl E., W. V. Adams, G. E. Sanford, Betty Greer, and Patricia Mayeux. (La. State Univ., Baton Rouge.) LEPTOSPIROSIS IN WILDLIFE AND DOMESTIC ANIMALS IN THE UNITED STATES. Trans. 26th N. A. Wildl. Conf. p. 211-219, 2 figs. 1961. WR 104: 16

Summary: Eleven leptospiral serotypes occur in various species of animals in the United States. These are as follows: (1) Leptospira pomona in cattle swine, horses, dogs, skunks, opossums, raccoons, bobcats and woodchucks; (2) L. canicola in dogs, cattle, swine, and skunks; (3) L. icterohaemorrhagiae in rats, dogs, and skunks; (4) L. hardjo in cattle; (5) L. ballum in mice, cotton mice, opossums, skunks, bobcats, cotton rats, raccoons, cottontail rabbits, and gray fox; (6) L. autumnalis in opossums, raccoons, and armadillos; (7) L. australis A in opossums, raccoons, and gray fox; (8) L. bakeri in opossums; (9) L. grippotyphosa in raccoons and red fox; (10) L. mini georgia in opossums and raccoons; and (11) LT 81 (hyos serogroup) in opossums, raccoons, and skunks.

Singh, Kunwar Suresh. (Post Graduate College of Animal Sciences, Mukteswar-Kumaun, U.P., India.) HELMINTHS OF INDIA. PART 1. TREMATODA. Wildl. Disease no. 21. 53 p. 23 Oct. 1961. WR 104: 16

[Published on 2 microcards.] Abstract: A compendium of all trematodes reported in the literature from all animals in India, including domesticated mammals but not wild mammals. A section devoted to parasites of mammals other than domesticated is in preparation by the author. 284 references.

SHREWS, MOLES, BATS

Bauer, Kurt, and Hans Steiner. BERINGUNGSERGEBNISSE AN DER LANGFLÜGEL FLEDERMAUS (MINIOPTERUS SCHREIBERSI) IN ÖSTERREICH. [THE RESULTS OF BANDING OF THE LONG-WINGED BAT (MINIOPTERUS SCHREIBERSI) IN AUSTRIA.] Bonner Zool. Beitr., Sonderheft 11: 36-53. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 16

[In German.]

Bradshaw, Gordon Van Rensselaer. A LIFE HISTORY STUDY OF THE CALIFORNIA LEAF-NOSED BAT, MACROTUS CALIFORNICUS. Ph.D. thesis, Univ. Ariz. 103 p. 1961. [From Dissertation Abstr. 22(2), 1961.] WR 104: 16

Feldmann, Reiner. FLEDERMAUSBERINGUNG IM SÜDLICHEN WESTFALEN. [BAT-BANDING IN SOUTHERN WESTPHALIA.] Bonner Zool. Beitr., Sonderheft 11: 210-214. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 16

[In German.]

Felten, Heinz, and Konrad Klemmer. FLEDERMAUS-BERINGUNG IM RHEIN-MAIN-LAHNGEBIET 1950-1959. [BAT-BANDING IN THE RHINE-MAIN-LAHN REGION 1950-1959.] Bonner Zool. Beitr., Sonderheft 11: 166-188. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 16

[In German.]

Frank, Helmut. BEOBACHTUNGEN AN FLEDERMÄUSEN IN HÖHLEN DER SCHWÄBISCHEN ALB UNTER BESONDERER BERÜCKSICHTIGUNG DER MOPSFLEDERMAUS (BARBASTELLA BARBASTELLUS). [OBSERVATIONS OF BATS IN CAVES OF THE SWABIAN ALPS WITH EMPHASIS ON BARBASTELLA BARBASTELLUS.] Bonner Zool. Beitr., Sonderheft 11: 143-149. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 16

[In German.]

Goodwin, George G., and Arthur M. Greenhall. (Am. Museum Nat. Hist., N. Y. C.) A REVIEW OF THE BATS OF TRINIDAD AND TOBAGO. DESCRIPTIONS, RABIES INFECTION, AND ECOLOGY. Bull. Am. Museum Nat. Hist. 122(3): 187-302, illus., maps. 1961. [From Biol. Abstr. 36(21), 1961.] WR 104: 16

Gould, Patrick J. (Univ. Ariz., Tucson.) EMERGENCE TIME OF TARIDA IN RELATION TO LIGHT INTENSITY. J. Mammal. 42(3): 405-407, 1 fig. Aug. 1961. WR 104: 17

The earliest emergence time noted for the pocketed free-tailed bats occurred about the first of December, and this time became gradually later until the end of July. The point at which the total solar radiation reaches zero appears to be an important factor in determining the emergence times of these bats.

Grinnell, A. D., and D. R. Griffin. (Harvard Biol. Lab., Cambridge 38, Mass.) NEURAL CORRELATES OF BATS' RESISTANCE TO JAMMING. Fed. Proc. 20 (1 Pt. 1): 327. 1961. [From Biol. Abstr. 36(18), 1961.] WR 104: 17

Abstract.

Gruber, Joh. VIER JAHRE FLEDERMAUSBERINGUNG IN EBERSCHWANG, OB. ÖSTERREICH (1956-59). [FOUR YEARS' BAT-BANDING IN EBERSCHWANG, UPPER AUSTRIA (1956-59).] Bonner Zool. Beitr., Sonderheft 11: 33-35. 22 Dec. 1960. [From J. Mammal. 42 (3), 1961.] WR 104: 17

[In German.]

Havekost, H. DIE BERINGUNG DER BREITFLÜGELFLEDERMAUS (EPTESICUS SEROTINUS SCHREBER) IM OLDENBURGER LAND. [BANDING OF THE SEROTINE BAT (EPTESICUS SEROTINUS SCHREBER) IN OLDENBURG.] Bonner Zool. Beitr., Sonderheft 11: 222-233. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 17

[In German.]

Hayward, Bruce Joliffe. THE NATURAL HISTORY OF THE CAVE BAT, MYOTIS VELIFER. Ph.D. thesis, Univ. Ariz. 127 p. 1961. [From abstr. in Dissertation Abstr. 22(2), 1961.] WR 104: 17

A natural history study of the populations of Myotis velifer in the vicinity of Tucson, Ariz. The results have been grouped under the major headings of morphology, distribution, populations, activities, reproduction and development, food habits, and behavior. Where applicable, natural history information from the literature was added.

Hoehl, Eduard. BERINGUNGSERGEBNISSE IN EINEM WINTERQUARTIER DER MOPSFLEDERMÄUSE (BARBASTELLA BARBASTELLUS SCHREB.) IN FULDA. [BANDING RESULTS OF BARBASTELLA BARBASTELLUS FROM THEIR WINTER QUARTERS IN FULDA.] Bonner Zool. Beitr., Sonderheft 11: 192-197, illus. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 17

[In German.]

Hummitzsch, E. FLEDERMAUSBERINGUNGEN IN LEIPZIG UND UMGEBUNG. [BAT-BANDING IN LEIPZIG AND VICINITY.] Bonner Zool. Beitr., Sonderheft 11: 99-104. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 17

[In German.]

Issel, Brigitte, and Willi Issel. BERINGUNGERGEBNISSE AN DER GROSSEN HUFEISENNASE (RHINOLOPHUS FERRUMEQUINUM SCHREB.) IN BAYERN. [BANDING RESULTS OF THE GREATER HORSESHOE BAT (RHINOLOPHUS FERRUMEQUINUM SCHREB.) IN BAVARIA. Bonner Zool. Beitr., Sonderheft 11: 124-142. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 17

[In German.]

Kowalska-Dyrcz, Alina. (Univ. Wrocław, Wrocław, Poland.) SEASONAL VARIATIONS IN SOREX ARANEUS LINNAEUS 1758 IN POLAND. Acta Theriologica 4(14): 268-273, 3 figs. 25 Apr. 1961. WR 104: 17

In English.

Krzanowski, Adam. (Inst. Exptl. Biol. Polish Acad. Sci., Puławy.) WEIGHT WEIGHT DYNAMICS OF BATS WINTERING IN THE CAVE AT PUŁAWY (POLAND). Acta Theriologica 4(13): 249-264, 4 figs. 15 Jan. 1961. WR 104: 18

In English with Polish summary. Based on 1016 measurements of the weight of 646 specimens of bats of 9 spp. Increase in weight with Myotis natteri, Barbastella barbastellus, Myotis myotis is decidedly quicker in the autumn than in the winter. There is no correlation between the beginning of hibernation and the autumn appearance in caves of M. myotis and M. natteri. With B. barbastellus and Eptesicus serotinus the spring extreme weight takes place outside the cave, differently than in analogous relations in the autumn. Decrease in weight differs greatly not only between different species and between the sexes, but also between individuals.--From auth. summ.

Natuschke, G. ERGEBNISSE DER FLEDERMAUSBERINGUNG UND BIOLOGISCHE BEOBACHTUNGEN AN FLEDERMÄUSEN IN DER OBERLAUSITZ. [RESULTS OF BAT-BANDING AND BIOLOGICAL OBSERVATIONS UPON BATS IN UPPER LUSATIA [SILESIA].] Bonner Zool. Beitr., Sonderheft 11: 77-98. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 18

[In German.]

Roer, H. VORLÄUFIGE ERGEBNISSE DER FLEDERMAUS-BERINGUNG UND LITERATURÜBERSICHT. [PRELIMINARY RESULTS OF BAT-BANDING WITH A REVIEW OF THE LITERATURE.] Bonner Zool. Beitr., Sonderheft 11: 234-256. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 18

[In German.]

Schmaus, M. FLEDERMAUSBERINGUNG IM HUNSRÜCK. [BAT-BANDING IN HUNSRÜCK.] Bonner Zool. Beitr., Sonderheft 11: 198-203. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 18

[In German. The Hunsrück Mountains are in the Rhine Province, Western Germany.]

Schnetter, Wolfgang. BERINGUNGSERGEBNISSE AN DER LANGFLÜGELFLEDERMAUS (MINIOPTERUS SCHREIBERSI KUHL) IM KAISERSTUHL. [BANDING RESULTS FOR THE LONG-WINGED BAT (MINIOPTERUS SCHREIBERSI KUHL) IN KAISERSTUHL.] Bonner Zool. Beitr. Sonderheft 11: 150-165. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 18

[In German.]

Schober, W. ZUR KENNTNIS MITTELDEUTSCHER FLEDERMÄUSE. [INFORMATION ON BATS OF CENTRAL GERMANY.] Bonner Zool. Beitr., Sonderheft 11: 105-111. 22 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 18

[In German.]

Scott, Harold George. (HEW, Atlanta, Ga.) BATS / PUBLIC HEALTH IMPORTANCE, IDENTIFICATION, AND CONTROL. Pest Control 29(8): 23-26, illus. Aug. 1961. WR 104: 18

Brief discussion is presented on the life history, benefits, problems, identification, and control of bats in the U. S. Bats are associated with several important communicable diseases including: rabies, Japanese "B" encephalitis, histoplasmosis, dermatomycoses, relapsing fevers, leptospirosis, and chagas disease. A pictorial key is shown for the genera of bats in the U. S.--Stephen V. Goddard.

Skoczeń, Stanisław. (High School Agr., Św. Marka 37, Kraków, Poland.) ON FOOD STORAGE OF THE MOLE TALPA EUROPAEA LINNAEUS 1758. Acta Theriologica 5 (2): 23-43, 2 figs. + 2 pls. 14 Apr. 1961. WR 104: 18

In English. Observations of captive moles and field observations indicate that the mole stores the food it has not consumed in the vicinity of the nest. The earthworm caches that have been discovered were always connected with winter nests of the mole.--From auth. summ.

RABBITS AND PIKAS

Bowen, Richard E., K. J. McMahon, and Ralph W. Mitchell. (Kans. State Univ., Manhattan.) INFECTIOUS DISEASES IN A BLACK-TAILED JACK RABBIT (LEPUS CALIFORNICUS MELANOTIS) POPULATION IN SOUTHWESTERN KANSAS. Trans. Kans. Acad. Sci. 63(4): 276-284. 1960. [From Biol. Abstr. 36(20), 1961.] WR 104: 19

Cochran, George A., and Howard J. Stains. (Southern Ill. Univ., Carbondale.) DEPOSITION AND DECOMPOSITION OF FECAL PELLETS BY COTTONTAILS. J. Wildl. Mgmt. 25(4): 432-435, 2 figs. Oct. 1961. WR 104: 19

Summary: The daily deposition rate of pellets varied considerably from rabbit to rabbit (0 to 687 pellets), from food to food, and from time to time with the same rabbit on the same food. Cottontails on a diet of soybeans deposited the most pellets; those fed corn deposited the least. The decomposition rate of rabbit pellets varied with location, temperature, composition of the pellets, and disturbance by invertebrates. In general, more than 50 percent of the pellets remained from 2 weeks to as long as 5 months. Aging of the pellets seems to be impossible by visual means. Present census techniques utilizing rabbit pellets probably are highly inaccurate although perhaps of some value as an index to populations. More basic work is needed as an aid to interpreting pellet counts.

Dodds, Donald G., and John S. Mackiewicz. (Dept. Lands & Forests, Kentville, Nova Scotia.) SOME PARASITES AND DISEASES OF SNOWSHOE HARES IN NEWFOUNDLAND. J. Wildl. Mgmt. 25(4): 409-414. Oct. 1961. WR 104: 19

Six hundred and thirty snowshoe hares were examined for parasites in Newfoundland between 1955 and 1959. The following parasites were found: Trematoda, Dicrocoelium dendriticum (Rudolphi); Cestoda, Mosgovoyia pectinata (Goeze), Taenia pisiformis (Block), Hydatigera taeniaformis (Batsch), and Multiceps sp.; Nematoda, Obeliscoides cuniculi (Graybill), Trichostrongylus axei (Cobbold); Acarina, Haemaphysalis leporis-palustris (Packard); Parasitidae unidentified to genus, and Siphonaptera, Ceratophyllus garei Rothschild. Heavy parasitism from the common rabbit stomach worm, O. cuniculi, may reduce resistance and occasionally destroy individual hares directly.--From auth. summ.

Ferris, Deam, Rex Lord, and David Huxsoll. (Univ. Ill., Urbana.) OBSERVATIONS ON CERTAIN DISEASES OF ILLINOIS COTTONTAILS. Wildl. Disease no. 15. 9 p., 5 figs. 23 Oct. 1961. WR 104: 19

[Numbers 13, 14, 15 and 16 on one microcard.] During the past two years more than 30 cases of an encephalitis in cottontail rabbits from central Illinois have been investigated. Experimental infection of both domestic rabbits and cottontails was carried out using brain triturates inoculated intracranially. The histology was characteristic of a viral encephalitis. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

Helminen, Matti. KEUHKOMADOSTA JA JÄNIKSISTÄ. [OF LUNGWORMS AND SNOWSHOE HARES.] Suomen Riista 13: 40-51, 2 figs. 1959. WR 104: 19

In Finnish with English summary on separate mimeo. sheet. During the late winters of 1957 and 1958, there were 433 and 303 pellet samples collected respectively. The occurrence of lungworm larvae in the samples for these years was 78.3% and 83.8%. The lungworm disease is not directly contagious, but infestation requires the presence of snails as a vector. Hare carrying lungworm can be used in transplantations if they are otherwise healthy. Eradication of the parasite seems impossible even in isolated management areas. --From auth. summ.

Martinson, R. K., J. W. Holten, and G. K. Brakhage. (Mo. Coop. Wildl. Res. Unit, Columbia.) AGE CRITERIA AND POPULATION DYNAMICS OF THE SWAMP RABBIT IN MISSOURI. J. Wildl. Mgmt. 25(3): 271-281, 5 figs. July 1961. WR 104: 19

Radiographic observation on 15 penned swamp rabbits (Sylvilagus aquaticus) disclosed that complete fusion of the distal radius and ulna did not occur prior to April. Estimated epiphyseal closure periods for these animals ranged from 10 to 13 months. Dry weights of the eye lens of swamp rabbits appeared to be valid criteria for separating adult from first-year animals. Sex and age ratios from swamp rabbits in this region are presented and compared with cottontails. Five years of hunting statistics from the study area are discussed.--R. K. Martinson.

Modin, G. V. [THE DISSEMINATION OF THE SEEDS OF CERTAIN WEEDS BY THE GRAY (COMMON) HARE.] Zool. Zhur. 39(3): 472-474. 1960. [From Biol. Abstr. 36 (18), 1961, from Referat. Zhur. (Biol.), 1961, no. 2D643.] WR 104: 20

Translation [from Russian]. Original with English summary. Seeds constitute 24% of the diet. Experiments yielded 45-48% intact ingested seeds. Thus a high degree of germination of seeds of amaranth, goosefoot (Chenopodium), and orache (Atriplex) occurs. The hare transfers 20 species of weed to cultivated fields and field-protecting plantations. With extension of the area to the north as a result of felling of forests and the increase in sown land, a number of species of weeds are introduced into zones where they did not previously grow.--From abstr.

RODENTS--MISCELLANEOUS

Abbott, H. G., and M. A. Parsons. (Univ. Mass., Amherst.) CUTEREBRA INFESTATION IN PEROMYSCUS. J. Mammal. 42(3): 383-385, 1 pl. Aug. 1961. WR 104: 20

Abstract: Details are presented of an infestation of white-footed mice by Cuterebra, observed in Mass. in 1959; an incidence of 27% was noted in 214 mice captured. Cases of myiasis in Peromyscus are reviewed, and possible results of this parasitism are discussed.

Adamczewska, Krystyna Anna. (Mammals Res. Inst. Polish Acad. Sci., Białowieża.) INTENSITY OF REPRODUCTION OF THE APODEMUS FLAVICOLLIS (MELCHIOR 1834) DURING THE PERIOD 1954-1959. Acta Theriologica 5(1): 1-21, 1 fig. 30 Apr. 1961. WR 104: 20

In English with Polish summary. The numbers of yellow-necked field mice depend primarily on the amount of food available in a given year (the fruitfulness of deciduous trees) and on climatic conditions during the periods of late autumn, winter, and early spring. During the year there is, essentially, only one period of appearance of young, either in the spring-summer period, or in the autumn; the autumn generations giving a greater number of young than the generations born in the spring and summer. Mass appearance of the yellow-necked field mouse is the result of an intensive autumn breeding season in a fruitful year. The generation born in the late autumn produces an enormous number of young in the spring and summer of the following year.--From auth. summ.

Barnes, Allan M., and Leo Kartman. CONTROL OF PLAGUE VECTORS ON DIURNAL RODENTS IN THE SIERRA NEVADA OF CALIFORNIA BY USE OF INSECTICIDE BAIT-BOXES. J. Hygiene 58(3): 347-355. Sept. 1960. [From Public Health Eng. Abstr. 41 (4), 1961.] WR 104: 20

The principal host species involved were the chipmunks Eutamias amoensus and E. speciosus and the golden-mantled ground squirrel, Citellus lateralis. When baited daily for 12 days and furnished with 50 g of 10% DDT dust, the bait-box stations reduced fleas strikingly within 24 hours, but very little residual control was obtained. The effect of the DDT was apparent at a distance of 400 ft from the nearest bait-box due to the relatively extensive home ranges of the hosts.

Broadoaks, Harold E. (Southern Ill. Univ., Alton.) HOMING BEHAVIOR OF DEER MICE AND POCKET MICE. J. Mammal. 42(3): 416-417. Aug. 1961. WR 104: 20

Delany, M. J. (Univ. Southampton, England.) OBSERVATIONS ON THE ECOLOGY AND LIFE HISTORY OF THE FAIR ISLE FIELD-MOUSE APODEMUS SYLVATICUS FRIDARIENSIS (KENNEAR). Proc. Zool. Soc. London 136(3): 439-452, 5 figs. May 1961. WR 104: 20

Based on measurements of 120 Fair Isle field-mice. The amount of tooth wear was used as an index of age. Breeding begins in late Feb., reaches a peak between June and Aug., and terminates in Sept. A number of animals survive a second summer. The size of the Fair Isle field-mouse is intermediate between those of the Mainland and St. Kilda.--From auth. summ.

Formozov, A. N., and K. S. Kodachova. (Inst. Geog. Acad. Sci. USSR.) LES RONGEURS VIVANT EN COLONIES DANS LA STEPPE EURASIENNE ET LEUR INFLUENCE SUR LES SOLS ET LA VEGETATION. [THE RODENTS LIVING IN COLONIES ON THE EURASIAN STEPPES, AND THEIR INFLUENCE ON SOILS AND VEGETATION.] Terre et Vie 108(1): 116-129. Jan.-Mar. 1961. WR 104: 21

[Transl. from Russian into French by S. Frechkop, supplied without bibliography.] In Kazakhstan and European USSR, colony-dwelling rodents make up 50% of the species of rodents and nearly 30% of all mammal species. They consume far more food than ungulates. Increasing land use in the steppes has profoundly changed the conditions of existence of these rodents. Ellobius talpinus and Spalax microphthalmus have almost entirely disappeared from the plains west of the Volga because of cultivation. Marmota bobac has almost been eliminated from European USSR by hunting and because of its inability to adjust to cultivated land. M. sibirica, which is more adaptable, is being systematically destroyed because it is host to plague vector fleas. Several ground squirrels, meriones, field mice and pika (Ochotona) are also being destroyed because they are hosts to medically important ticks. Marmots, ground squirrels and field mice are the most important forms in causing changes in soil, microrelief and floral composition. [Plant and animal succession as affected by rodents in the northern, central and southern steppes and the semi-arid deserts is outlined.]--From abstr. by K. M. Chew.

Getz, Lowell L. (Univ. Mich., Ann Arbor.) RESPONSES OF SMALL MAMMALS TO LIVE-TRAPS AND WEATHER CONDITIONS. Am. Midland Nat. 66(1): 160-170, 3 figs. July 1961. WR 104: 21

Previously captured individuals of Microtus pennsylvanicus were more readily captured than were the unmarked ones, even after an interval of a month. There was no difference in the rate of capture of marked and unmarked Peromyscus leucopus. In the "old field" type habitat, temperatures above 20 C caused the M. pennsylvanicus to abandon diurnal activity in favor of nocturnal or crepuscular activity. During the winter, when the temperature dropped below zero C, the activity was much less at all times. Except for less activity during the days the temperature rose above 20 C, such responses were not observed in the marsh type habitat. No correlations between activity and temperature variations were observed for Blarina brevicauda.--From auth. abstr.

Golley, Frank B. (Univ. Ga., Athens.) INTERACTION OF NATALITY, MORTALITY AND MOVEMENT DURING ONE ANNUAL CYCLE IN A MICROTUS POPULATION. Am. Midland Nat. 66(1): 152-159, 1 fig. July 1961. WR 104: 21

A population of meadow mice (Microtus pennsylvanicus) was studied through one annual cycle near East Lansing, Mich. Mortality was highest in the summer and least in the winter. This was the result of: (1) change in the age composition of the population, and (2) probable reduction of predation due to a persistent snow cover. Mortality was highest in the postnestling juveniles and young adults. In other age classes mortality continued at approximately 50%. Even though the natural rate of increase of the population was negative, immigration was sufficient to cause the population to increase in size.--From auth. abstr.

Gottschang, Jack L. (Univ. Cincinnati, Ohio.) ZAPUS FROM WARREN COUNTY, OHIO. Ohio J. Sci. 61(2): 125. 1961. WR 104: 21

First trap record from Warren Co. and the southwestern-most record for the State of Ohio.--R. W. Dexter.

Holišová, Věra. POZOROVÁNÍ MYSICE KŘOVINNÉ (APODEMUS SYLVATICUS) V PŘÍRODĚ. [OBSERVATION OF LONG-TAILED FIELD-MOUSE (APODEMUS SYLVATICUS) UNDER NATURAL CONDITIONS.] Zool. Listy 24(1): 85-86. 1961. [From Biol. Abstr. 36(14), 1961.] WR 104: 21

[In Czech] with English summary. An account of an uninterrupted observation of a long-tailed field mouse in a coniferous forest during a 43-hour period.--From auth. abstr.

Ingels, Lloyd G. (Fresno State Coll., Fresno, Calif.) REINGESTION IN THE MOUNTAIN BEAVER. J. Mammal. 42(3): 411-412, 1 pl. Aug. 1961. WR 104: 21

Johnson, Donald R. (Colo. State Univ., Fort Collins.) THE FOOD HABITS OF RODENTS ON RANGELANDS OF SOUTHERN IDAHO. Ecology 42(2): 407-410. Apr. 1961. WR 104: 22

Deer mice, western harvest mice, and least chipmunks were found to rely heavily on arthropods for food. Ord's kangaroo rats ate a variety of leaves and seeds. Chiseltoothed kangaroo rats fed almost exclusively on the leaves of shadscale. The food material carried in the cheek pouches of kangaroo rats was much the same as that found in the stomachs at the time of trapping. There was a progressive decrease in the use of cheek pouches to carry food material by 2 kinds of kangaroo rats from early spring into the summer. Most of the rodents inhabiting shadscale and sagebrush associations subsist on diverse kinds of food. Halogeton seeds and seedlings constituted a large part of the food eaten by most rodents during the spring and early summer.--From auth. summ.

Kaye, Stephen V. (Oak Ridge Natl. Lab., Oak Ridge, Tenn.) MOVEMENTS OF HARVEST MICE TAGGED WITH GOLD-198. J. Mammal. 42(3): 323-337, 4 figs. + 1 pl. Aug. 1961. WR 104: 22

Movements for several hours following the release of the mice from live-traps were suggestive of meandering, indicating that the mice may have been confused, frightened, or hungry from overnight trap confinement. Small globular-shaped grass nests located in or under the herbaceous layer of vegetation were used as den sites. The nests were situated on the periphery of the range and varied from 2 to 4 per animal. Harvest mice movements were mostly limited to night, but during winter occasional short diurnal movements from nests were recorded. Certain areas within the range of each tagged mouse were avoided completely.--From auth. abstr.

Kaye, Stephen V. (Oak Ridge Natl. Lab., Oak Ridge, Tenn.) LABORATORY LIFE HISTORY OF THE EASTERN HARVEST MOUSE. Am. Midland Nat. 66(2): 439-451, 5 figs. Oct. 1961. WR 104: 22

The gestation period of Reithrodontomys humulis is about 21 days. The sizes of 9 litters ranged from 2 to 4, with a mean of 3.2. A mean of 1.2 grams was recorded from the weights of 27 young at birth. The reproductive efficiencies of 4 ♀♀ ranged from 30.8 to 50.5%. The highest recorded reproductive efficiency of any mammal is 53.2% for Microtus arvalis. Details are presented as to parental care, growth and development of young, and the behavioral patterns in the eastern harvest mouse.--From abstr.

Koshkina, T. V., and A. S. Khalanskiy. [MASS REPRODUCTION OF NORWEGIAN LEMMINGS IN THE SOUTH OF KOL'SLIY POLUOSTROV.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 112-114. 1960. [From Polar Record 10(69), 1961.] WR 104: 22

[In Russian.] "Increase in numbers of Lemmus lemmus in 1957-58."

Kraft, V. A. [A BARRIER-TRAP METHOD USED TO QUANTITATE THE MIGRATIONS OF WATER-VOLES.] Zool. Zhur. 39(5): 789-791. 1960. [From Biol. Abstr. 36(18), 1961, from Referat. Zhur. (Biol.), 1961, no. 3D579.] WR 104: 22

Translation [from Russian]. Original with English summary. Between reservoirs, pathways were beaten in the grass and reeds, and across them 20 cm tall barriers of wire-net or other materials were placed. On both sides of the barriers, at their base, traps were set. The direction and intensity of migration were estimated from the side of the barriers where the water-voles were trapped in greater numbers.

McCulloch, C. Y., and J. M. Inglis. (Ariz. Game & Fish Dept., Phoenix.) BREEDING PERIODS OF THE ORD KANGAROO RAT. J. Mammal. 42(3): 337-344, 1 fig. Aug. 1961. WR 104: 22

During the 8 intermittent years for which records were available, Dipodomys ordi richardsoni usually began breeding in Aug. or Sept. and ended in Mar. Rate of reproduction was associated with precipitation, food supply, and population densities of kangaroo rats and other rodents. The success of the breeding seasons and the factors influencing breeding success are discussed for the period 1955 through 1958.--From auth. abstr.

Reichstein, Hans. UNTERSUCHUNGEN ZUM AKTIONSRAUM UND ZUM REVIERVERHALTEN DER FELDMAUS MICROTUS ARVALIS (PALL.). [INVESTIGATIONS ON HOME RANGE AND TERRITORIAL BEHAVIOR OF THE FIELD VOLE MICROTUS ARVALIS (PALL.).] Z. Säugetierk. 25(3-4): 150-169. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 23
[In German.]

Rudyshin, M. P. [THE DORMOUSE (GLIS GLIS) AS A FOREST PEST.] Lesnoe Khoz. 8: 38. 1960. [From Biol. Abstr. 36(17), 1961, from Referat. Zhur. (Biol.), 1961, no. 3D652.] WR 104: 23
Translation [from Russian].

Saint-Girons, Marie-Charlotte. LE RYTHME NYCTHÉMÉRAL D'ACTIVITÉ DU CAMPAGNOL ROUX, CLETHRIONOMYS GLAREOLUS (SCHREBER) 1780. [THE DIEL ACTIVITY PATTERN OF THE BANK VOLE, CLETHRIONOMYS GLAREOLUS (SCHREBER) 1780.] Mammalia (Paris) 24(4): 516-532. Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 23
[In French.]

Sapozhenkov, Yu. P. [THE EFFECT OF THE LARGE GERBIL (RHOMBOMYS OPIMUS) ON VEGETATION IN THE BLACK-SAXAUL GROVES OF THE EASTERN KARAKUMY.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(3): 20-27. 1960. [From Biol. Abstr. 36(20), 1961, from Referat. Zhur. (Biol.), 1961, no. 7D582.] WR 104: 23
Translation [from Russian]. Original with English summary. A geobotanical description is given of 64 colonies, in 27 of which a plant count was made. The character of the vegetation depends upon the age of the colonies. Three colony stages were differentiated according to age: (I) Of recent origin (less than a year old); (II) medium-old colonies (2-4 years); (III) old coverts (not less than 5-6 years). The activity of the large gerbil leads to depression of the tree and shrub vegetation and to a decrease in the biomass of pasture plants.

Schindler, U. BEKÄMPFUNG DER ERDMAUS (MICROTUS AGRESTIS L.) UND DER GROSSEN WÜHLMAUS (ARVICOLA TERRESTRIS L.) MIT CHLORIERTEN KOHLENWASSERSTOFFEN. [CONTROL OF THE FIELD VOLE (MICROTUS AGRESTIS L.) AND THE WATER VOLE (ARVICOLA TERRESTRIS L.) WITH CHLORINATED HYDROCARBONS.] Intern. Congr. Crop Protection Proc. 4 (2): 1343-1347. 1957 [1960]. [From Bibliog. Agr. 25(8), 1961.] WR 104: 23
In German. "Forest pests in Germany. Includes discussion."

Tokobaev, M. M. [THE HELMINTHS OF THE RODENTS OF KIRGIZIA.] Trudy Gel'mintol. Lab. Akad. Nauk SSSR 10: 235-247. 1960. [From Biol. Abstr. 36 (19), 1961, from Referat. Zhur. (Biol.), 1961, no. 5E74.] WR 104: 23
Translation [from Russian]. From 1955 to 1957, studies were carried out on 1872 rodents, belonging to 27 species. Of these 999 were infected with helminths, comprising 48 species of worms: 3 spp. of flukes, 18 spp. of tapeworms (6 were represented by larvae), 3 spp. of roundworms, and 1 sp. of Acanthocephala. For each type of parasite the host, location, and habitat are indicated.--From abstr.

Watson, George E., 3rd. (Yale Univ., New Haven, Conn.) BEHAVIORAL AND ECOLOGICAL NOTES ON SPALAX LEUCODON. J. Mammal. 42(3): 359-365. Aug. 1961. WR 104: 23
Observations were made on burrowing techniques, defense, vocalization, nest building, and water requirements of an adult ♀ Spalax leucodon maintained in captivity for one month. Additional notes are included on the species' economic importance, local methods of capture, time sense, natural burrows, and distribution in the Aegean region.--From auth. abstr.

Wray, D. L., and G. F. Knowlton. (Dept. Agr., Raleigh, N. C.) COLLEMBOLA FROM RODENT NESTS. Entomol. News 72(9): 248-251. Nov. 1961. WR 104: 23
Collembola of 23 spp. belonging to 9 genera were found in the rodent nest examined. (Nests included those of Thomomys talpoides, Microtus sp., Neotoma cinerea, and one undetermined "mouse nest.")

RODENTS--MISCELLANEOUS--Continued

Zarnowski, E. PARASITIC WORMS OF FOREST MICROMAMMALIANS (RODENTIA AND INSECTIVORA) OF THE ENVIRONMENT OF PUŁAWY (DISTRICT LUBLIN). II. TREMATODA. Acta Parasitol. Polonica 8(8/20): 127-168. 1960. [From Helminthol. Abstr. 30(2), 1961.] WR 104: 24

With Polish summary. The trematodes found in 10 spp. of rodents and 4 spp. of insectivores.

RATTUS AND MUS

Bentley, E. W., A. H. Bathard, and J. D. Riley. (Ministry Agr., Fisheries & Food, Tolworth, Surbiton, Surrey, England.) THE RATES OF RECOVERY OF SEWER RAT POPULATIONS AFTER POISONING. J. Hygiene 57(3): 291-298. Sept. 1959. WR 104: 24

Summary: The recovery, after poisoning, of the rat population of eight sewer systems was measured by the bait-census method. In three of the systems the mean rate of increase was of the order of 3% per week. This is attributed solely to breeding and is regarded as typical for rats in sewers. Higher rates of increase (up to 11.8%) were also recorded but are believed to have been partly due to immigration or to have been only apparent (as a result of census difficulties). The consequences for control of a rate of increase as low as 3% per week are discussed.

Dhaliwal, S. S. (Univ. Malaya, Singapore.) ECOLOGICAL AND GEOGRAPHICAL STUDIES OF RATTUS RATTUS IN MALAYA. J. Mammal. 42(3): 349-358, 2 figs. + 2 pls. Aug. 1961. WR 104: 24

Pippin, Warren F. (Med. Serv. School, Gunther Air Force Base, Ala.) THE DISTRIBUTION AND MOVEMENT OF ROOF RATS ON MONA ISLAND, WEST INDIES. J. Mammal. 42(3): 344-348, 1 fig. + 2 pls. Aug. 1961. WR 104: 24

The roof rat, Rattus rattus, is the only species present on Mona Island, West Indies. In a one-year period, 237 specimens were collected; 71 rats were marked and released; 41 (57.7%) were recovered at least once. Forty of the marked rats were released in areas other than where captured. The recovery in this group was 16 (33.3%). The rate of recovery of the rats liberated where they were originally captured was almost 85%.--From auth. abstr.

SCIURIDS

Brauer, Alfred. (Univ. Ky., Lexington.) SEXUAL CYCLES AND BREEDING SEASONS OF THE GRAY SQUIRREL, SCIURUS CAROLINENSIS GMELIN. Trans. Ky. Acad. Sci. 22 (1/2): 16-27. 1961. [From Biol. Abstr. 36(20), 1961.] WR 104: 24

Two annual breeding seasons are shown. The seasons are Dec. through Jan., and mid-June through July with some overlap. The gestation period was 44-45 days and the suckling period in the nest was approximately 45 days. The young animals are quite immature at the first mating period after their birth, but mature enough for sexual play among themselves at the second mating period. They mature between the second and third mating periods and may be the ones responsible for interseasonal activity from March to May and from Nov. to the winter mating period.--From abstr. by R. H. Weaver.

Bullard, Robert W., and Gordon E. Funkhouser. (Indiana Univ. School Med., Indianapolis.) CIRCULATORY PATTERNS DURING DEHIBERNATION OF THE 13-LINED GROUND SQUIRREL. Fed. Proc. 20(1 Pt. 1): 211. 1961. [From Biol. Abstr. 36 (16), 1961.] WR 104: 24

"Abstract."

Ivanov, K. A. [POPULATION DYNAMICS OF FLEAS PARASITIZING GROUND SQUIRRELS CITELLUS PYGMAEUS PALL. OVER VARIOUS YEARS AND ITS RELATION TO METEOROLOGICAL CONDITIONS.] Zool. Zhur. 40(1): 31-35. Jan. 1961. [From Bibliog. Agr. 25(5), 1961.] WR 104: 24

Jones, John C. (Bur. Sport Fisheries & Wildl., Washington, D. C.) SQUIRREL PROBLEMS AND WHAT TO DO ABOUT THEM. Pest Control 29(8): 14, 16, 18-20, 22, illus. Aug. 1961. WR 104: 25

A discussion is presented of the damage caused by squirrels and of possible control methods. These control methods include: squirrel-proofing, repellents, removal, and reduction.--Stephen V. Goddard.

Kapitonov, V. I. [THE ECOLOGY OF THE MARMOT.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 114-115. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 25

In Russian.

Merriam, Howard Gray. PROBLEMS IN WOODCHUCK POPULATION ECOLOGY AND A PLAN FOR TELEMETRIC STUDY. Ph.D. thesis, Cornell Univ. 169 p. 1960. [From Dissertation Abstr. 22(2), 1961.] WR 104: 25

"Some vital statistics of a woodchuck (Marmota monax rufescens) population are difficult to obtain by existing methods. Marking woodchucks with radio transmitters and monitoring these telemetrically should improve estimates of population parameters. Certain aspects of woodchuck population ecology and autecology were investigated to determine requirements for a monitoring system. The distribution of dens fitted a negative binomial distribution. Almost all dens were in well drained soil and were more frequent on steeper slopes. A spring population of 25 to 35 produced 29 to 40 young. Mortality losses from one litter were followed in detail. Dispersal of juveniles was gradual until independence then saltatorial in some cases. Woodchucks frequently move among five to eight dens during all seasons. A small transmitter was developed for surgical insertion in woodchucks. A telemetric system was developed that is potentially capable of recording the identity (frequency) and location of all marked woodchucks in 50 dens once every five minutes. Transmitters were inserted in 17 woodchucks which were released in field tests. Preliminary tests indicate that animals can be located and identified by this system. Tests and development are being continued."

Moore, Joseph Curtis. GEOGRAPHIC VARIATION IN SOME REPRODUCTIVE CHARACTERISTICS OF DIURNAL SQUIRRELS. Bull. Am. Museum Nat. Hist. 122(1). 32 p. 3 Apr. 1961. Price $1.00. WR 104: 25

The baculum and skull characters have proved useful in separating the oriental tree squirrels (Callosciurini) from the Holarctic members of the tribe Sciurini. A third line of evidence (the number of pairs of functional mammae) is presented in this paper. In addition to being of systematic value in its geographical variation, the number of pairs of functional mammae is shown to vary with latitude. The number of pairs generally decreases from boreal and temperate climates to tropical ones.--From auth. summ.

Noble, Glenn A. (Calif. State Polytech. Coll., San Luis Obispo.) STRESS AND PARASITISM. I. A PRELIMINARY INVESTIGATION OF THE EFFECTS OF STRESS ON GROUND SQUIRRELS AND THEIR PARASITES. Exptl. Parasitol. 11(1): 63-67. 1961. [From Biol. Abstr. 36(16), 1961.] WR 104: 25

The Uinta ground squirrel, Citellus armatus, in Jackson Hole, Wyoming, was selected for a study of stress and parasitism during the summers of 1959 and 1960. Two hundred and twenty-six squirrels were live-trapped; 72 of the animals were used as controls and 155 were subjected to the stress of heat and light, noxious stimulants, noise, crowding, darkness, hunger, annoyance, extreme confinement or caging without added stimuli. A carefully controlled dilution technique was devised to give a representative count of the cecal protozoa, mostly Trichomonas. Over the period of two summers there was an average increase of 48% in numbers of protozoa in the stressed animals as compared to the controls. The white blood cell count decreased as the numbers of protozoa increased. The weights of the adrenal glands, however, also decreased in the stressed animals. A continuing study will be made of these and of related problems.--Author.

SCIURIDS--Continued

Oldham, J. N. STUDIES ON PARASITES OF THE GREY SQUIRREL (SCIURUS CAROLINENSIS GMELIN) FROM SOUTH EASTERN ENGLAND. J. Helminthol., R. T. Leiper Suppl. p. 127-130. 1961. [From Vet. Bull. 31(9), 1961.] WR 104: 26

Trichostrongylus retortraeformis occurs not only in rabbits and hares but also in gray squirrels, and it has succeeded in adapting itself to ruminant hosts such as the goat, Chinese water deer, and the blackbuck. The gray squirrel possibly acts as a disseminator.--From abstr.

Psenner, Hans. DAS VERHALTER DER MURMELTIERE (MARMOTA M. MARMOTA), INSBESONDERE VON MUTTER UND JUNGEN, IM BAU. [THE DEN BEHAVIOR OF THE MARMOT (MARMOTA M. MARMOTA), ESPECIALLY THAT OF ADULT FEMALE AND YOUNG.] Säugetierk. Mitteil. 8(3-4): 144-148. 1 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 26

[In German.]

Snyder, Robert L., David E. Davis, and John J. Christian. (Zool. Soc. Philadelphia, Philadelphia, Pa.) SEASONAL CHANGES IN THE WEIGHTS OF WOODCHUCKS. J. Mammal. 42(3): 297-312, 3 figs. + 1 pl. Aug. 1961. WR 104: 26

An account of the seasonal changes in the weights of woodchucks, Marmota monax monax, is given for 3 age classes: (1) young of the year, (2) yearling, and (3) adult. Woodchucks attain progressively higher weights each year for the first 3 years of life. They gain and lose weight periodically, gaining weight for about 6 months, and then losing weight for the next 6. The mean rate of increase in weight was highest in the young of the year, followed by the yearling and adult classes respectively. Total losses during the period of decline in weight ranged from 20% of the prehibernal weight of young ♂♂ to 37% of the prehibernal weight of adult ♂♂. Adult ♂♂ emerged from hibernation approximately a month before the ♀♀ and the yearling ♂♂. Fat was utilized as a source of energy during the period of food scarcity which followed hibernation. Fat was also an important source of energy for the ♀♀ during the spring breeding season. They utilized fat reserves during gestation and lactation.--From auth. abstr.

BEAVER

German, A. L. [RESTORATION OF THE BEAVER IN THE LAPLAND STATE PRESERVE.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(3): 13-19. 1960. [From Biol. Abstr. 36(18), 1961, from Referat. Zhur. (Biol.), 1961, no. 5D656.] WR 104: 26

Translation [from Russian]. Original with English summary. In August and September, 1959, beavers were studied at all the main reservoirs of the Preserve. Twenty-two colonies (18 family colonies and 4 individual-type) were examined, approximately 76 beavers. With some variations the number of beavers is maintained at that level for a 10-12 year period. Because of the scarcity and over-utilization of the food base (mainly birch), the beaver colonies continually move from place to place. A colony on the Chuna River has an average life span of little more than 10 years. The three oldest colonies in the Preserve have been in existence for 22-23 years, 5 colonies for more than 12 years, and 14 colonies for less than 10 years. Activization of the beavers' construction work was observed. Before 1941 there were no beaver lodges and dams in the Preserve. In the years 1947-1956 they were noted in 7 colonies (lodges in 36%, dams in 41%). It is supposed that the number of beavers will not increase in the near future.

Parrish, William F., Jr. STATUS OF THE BEAVER (CASTOR CANADENSIS CAROLINENSIS) IN GEORGIA, 1959. M.S. thesis, Univ. Ga. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 26

MUSKRAT AND NUTRIA

Eble, H. (Martin Luther Univ., Halle-Wittenberg, East Germany.) BEFALL DER BISAMRATTEN DURCH CYSTICERCUS FASCIOLARIS IM GEBIET DER DDR. [THE INFECTION OF MUSKRATS WITH CYSTICERCUS FASCIOLARIS IN EAST GERMANY.] Wiss. Z. der Martin-Luther-Univ. Halle-Wittenberg. Math.-Naturwiss. Reine 6(1): 159-165. 1957. [From Helminthol. Abstr. 30(3), 1961.] WR 104: 27

[In German.] Twenty-eight percent of 300 muskrats caught in East Germany were infected with Cysticercus fasciolaris. Two-thirds of the infected animals were ♂♂. Variation in rate and intensities of infection are considered in relation to resistance, to the age and biology of the hosts and the degree of contamination of the water habitat.--G. I. Pozniak.

BEARS

Harlow, Richard F. (905 Camphor Lane, DeLand, Fla.) CHARACTERISTICS AND STATUS OF FLORIDA BLACK BEAR. Trans. 26th N. A. Wildl. Conf. p. 481-495, 3 figs. 1961. WR 104: 27

Data on the Florida black bear include cranial measurements, legal and illegal kill from 1 Jan. 1959 through 10 Jan. 1960, average weights of Florida bear compared with black bear from other states, litter size, food habits, and economic status. Recommendations for management include decreasing the illegal kill, providing special bear hunt areas, encouraging the saving of oaks, protecting ♀ bear, obtaining more accurate annual kill figures, publicizing the esthetic value of the bear, and continuing research investigations concerning population trends and reproductive potential.--From auth. abstr.

Krott, Peter. (Pinzolo, Trentino, Italy.) WIRD DIE ERHALTUNG DER LETZTEN ALPENBÄREN GELINGEN? [WILL THE PRESERVATION OF THE BEAR IN THE ALPS BE SUCCESSFUL?] Schweizer Naturschutz 26(4): 95-100, 1 fig. July 1960. WR 104: 27

In German with French summary.

Troyer, Willard A. (US F&WS, Kodiak, Alaska.) THE BROWN BEAR HARVEST IN RELATION TO MANAGEMENT ON THE KODIAK ISLANDS. Trans. 26th N. A. Wildl. Conf. p. 460-468, 3 figs. 1961. WR 104: 27

The brown bears of the Kodiak Islands, Alaska, have been subjected to increasingly heavy hunting pressure since World War II. Hunting is permitted during spring and fall seasons. About two-thirds of the bears are taken in the spring. The annual kill has fluctuated from 157 to 225 during the period of 1950 through 1960. Trophy hide measurements indicate spring hides of ♂ bears average six inches greater than fall hides. The overall mean hide size has remained relatively uniform, although the number of ten-foot bears in the kill has slightly decreased. The sex ratio has remained relatively constant over the eleven-year period and ♂♂ constitute 65% of the harvest. The proportion of ♂♂ in the spring harvest is 68% as compared to 59% in the fall. The brown bear are managed for a maximum production of trophy sized bears and regulations are based on the fluctuation of trophy sized bears, total take, chronology of the kill and the sex differential in the harvest. The statistics collected indicate the population is in a satisfactory state, although a slight reduction in ten-foot size bear has occurred. To compensate for this reduction, the fall season has recently been reduced.--Auth. abstr.

RACCOON, RINGTAIL, COATI

Stains, Howard. (Southern Ill. Univ., Carbondale.) COMPARISON OF TEMPERATURES INSIDE AND OUTSIDE TWO TREE DENS USED BY RACCOONS. Ecology 42(2): 410-413, 2 figs. Apr. 1961. WR 104: 27

Inside and outside den temperatures followed similar patterns, but the inside temperatures were found to vary less than the outside ones. A yearly average change of 5.4 F outside caused a one degree change inside the well insulated den and a change of 4.5 F outside caused a one degree change in the poorly insulated den. There was a temperature lag between den and outside temperatures. This lag was greater during rising temperatures. During periods of continuous trends, up or down, the den temperature often continued to a uniform prolonged peak or trough for as long as 276 hours.--From auth. summ.

MUSTELIDS

Baevsky, U. B. [ON THE RESORPTION AND TRANSFERENCE OF THE EMBRYO BY THE SABLE.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 115-119. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 28
In Russian.

Balph, David F. (Utah State Univ., Logan.) UNDERGROUND CONCEALMENT AS A METHOD OF PREDATION. J. Mammal. 42(3): 423-424, 1 fig. Aug. 1961. WR 104: 28
Badgers enlarged ground squirrel burrows and used these structures in "ambushing" their prey.

Franke, D. EEN NEST MET JONGE OTTERS IN DE OUDE VENNEN. [A NEST WITH YOUNG OTTERS IN THE OUDE VENNEN.] Levende Natuur 62(8): 169-172, illus. 1959. [From Biol. Abstr. 36(16), 1961.] WR 104: 28
[In Dutch.] "Evidence is adduced that the otter stock may be on the increase in Friesland."--P. Korringa.

Manaro, Arthur J. (Univ. Fla., Gainesville.) OBSERVATIONS ON THE BEHAVIOR OF THE SPOTTED SKUNK IN FLORIDA. Quart. J. Fla. Acad. Sci. 24(1): 59-63. 1961. [From Biol. Abstr. 36(18), 1961.] WR 104: 28
Notes on captive spotted skunks, Spilogale putorius ambarvalis, and observations made while live-trapping specimens in a coastal scrub habitat in Volusia County, Fla., are reported. Average trap success was 5 animals per 100 trap-nights. The skunks were secretive and mainly nocturnal: bright moonlight inhibited their activity. Wild individuals and captives engaged in climbing activity. Tortoise burrows served as den sites on the study area, proximity of cover seemingly being a factor in den site selection. A high-pitched screech and throaty grunt were the only vocalizations recorded. Captives preferred live foods and drank little water. Aggressive behavior occurred when skunks were housed together: defensive behavior consisted of handstands, stamping of feet, and discharge of musk.--J. N. Layne.

Romanov, I. V. [THE HELMINTHS OF THE SABLE AND OTHER CANINES OF THE KRASNOYAR KRAI.] Zool. Zhur. 39(7): 995-1002. 1960. [From Biol. Abstr. 36 (19), 1961, from Referat. Zhur. (Biol.), 1961, no. 5E77.] WR 104: 28
Translation [from Russian]. Original with English summary. From 1948 to 1954, in 9 districts of the Krasnoyar Krai, helminthologic studies were undertaken on 305 sables, 19 Mustela sibirica, 12 ermines, 6 minks, 2 weasels, a polecat, a wolverine and an otter. In the canines, 20 helminths were found: 3 cestodes, 16 nematodes, and 1 Acanthocephala. The helminthic infection in sables was 82.2%, in ermines -- 66.6%, in Mustela sibirica -- 42.1%, in minks -- 33.3%. In sables, 17 species of helminths were found.--From abstr.

Rubina, M. A. [SOME FEATURES OF WEASEL (MUSTELA NIVALIS L.) ECOLOGY BASED ON OBSERVATIONS IN THE MOSCOW REGION.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 27-33. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 28
In Russian with English summary.

Waters, Joseph H., and Clayton E. Ray. (Bridgewater State Coll., Bridgewater, Mass.) FORMER RANGE OF THE SEA MINK. J. Mammal. 42(3): 380-383, 1 fig. Aug. 1961. WR 104: 28
Abstract: Reviewed are records of the sea mink, Mustela macrodon, from Casco Bay to the Bay of Fundy. This species has apparently been extinct for no less than 60 years. Details are presented of a new record from an archaeological site in Middleboro, Mass., 12 miles from the nearest salt water, which extends the known range at least 125 miles southward.

Wijngaarden, A. van. A CENSUS OF THE BADGER, (MELES MELES (L.)) IN THE NETHERLANDS. Arch. Neerland. Zool. 13(4): 605-606. 1960. [From Biol. Abstr. 36(18), 1961.] WR 104: 28
Abstract.

Freeman, R. S., A. Adorjan, and D. H. Pimlott. (Ontario Res. Foundation, Toronto, Ontario.) CESTODES OF WOLVES, COYOTES, AND COYOTE-DOG HYBRIDS IN ONTARIO. Canadian J. Zool. 39(4): 527-532, 11 figs. Aug. 1961. WR 104: 29

Abstract: Echinococcus granulosus, Taenia hydatigena, and T. krabbei were the most common cestodes encountered in timber wolves of Ontario, with T. pisiformis, T. laticollis, and T. crassiceps being less common. Taenia pisiformis was the only common cestode of coyotes, although T. hydatigena, T. laticollis, E. granulosus, and Mesocestoides sp. were recovered. No Multiceps sp. was found. In Ontario, propagation of T. pisiformis apparently depends mainly on coyotes, whereas E. granulosus, T. hydatigena, and T. krabbei depend on wolves. E. granulosus was approximately twice as common in wolves from areas where moose are more common than deer, and conversely T. hydatigena and T. krabbei were approximately twice as common in wolves from areas where deer are more common than moose.

Lord, Rexford D., Jr. (Ill. Nat. Hist. Surv., Urbana.) A POPULATION STUDY OF THE GRAY FOX. Am. Midland Nat. 66(1): 87-109, 3 figs. July 1961. WR 104: 29

The age-ratio-reduction method was used to determine the size of the gray fox population on the study area. The population size was also estimated by several different variations of the recapture method. The recapture methods usually gave higher estimates than the age-ratio-reduction method. The age-ratio-reduction method indicated a density of slightly less than 3 to 4 foxes per square mile. The home range of the gray fox in the region is estimated to have a diameter of 2 miles. Twenty-one groups of foxes of family composition were captured in areas isolated from captures of other foxes and were termed family aggregations.--From auth. abstr.

Makridin, V. P. [THE BIOLOGY OF THE TUNDRA WOLF.] Trudy Nauch.-Issled. Inst. Sel'sk Khoz. Krain. Severa 9: 3-54. 1959. [From Biol. Abstr. 36(22), 1961, from Referat. Zhur. (Biol.), 1961, no. 4D691.] WR 104: 29

Translation [from Russian]. Observations were carried out in the Bol'shezemel'skaya and Malozemel'skaya Tundras in 1951-52 and to some extent in the following years. A study of killed wolves showed that Canis lupus albus makes its habitat here (some morphological data on the wolves are presented); the dimensions of the tundra wolf are smaller than those of the forest wolves. Data on their winter nutrition is presented based on an analysis of 18 stomach contents (the flesh of the deer was found in all, plus, in 3, the remains of the white partridge, and in 2, mouse-like rodents). The wolves living along the sea coast feed on matter thrown up by the sea and on the remains of fish left by fishermen. A small proportion of the wolves winter in the river valleys, where they hunt wild game and sometimes steal it from traps. The distribution and migrations of most of the wolves depend on the distribution of the domestic deer. The ways in which wolves hunt deer are described. In the winter, the hunting trips of the wolves sometimes exceed 70-150 km. The usual speed while searching for food is 15-20 km/hr, but 70-80 km/hr can be maintained for short periods. The mating season in wolves is usually in the second half of March; whelping takes place in the burrows (usually on raised river banks, the entrance to the burrow having a southern exposure). There are 3-8 cubs in the litter, averaging about 6. While hunting food for the cubs, the wolves go 10-15 km and more from the den. Towards the beginning of August, as the result of exhaustion of the food supply, the cubs forsake the area of the burrow and migrate to areas which are richer in wild game. Data are presented on the time of onset of sexual maturity, the structure of the sex organs, the relationship of the sexes in the population, and on the preparation of wolf pelts. Forty-three times as many wolves were killed per unit area in the Tambov oblast as in the Yamalo-Nenetskii national okrug. Observation of an area of 27-30 thousand square kilometers from an airplane resulted in the detection of 37 wolves, an average of 1 wolf per 700-800 km^2. No more than 250-300 wolves live in the territory of the Yamalo-Nenetskii national okrug. A map showing the distribution of the burrows of wolves in the tundras from Kanin to the Yugorskii Peninsula is presented. Bibliography with approximately 90 references.

Skrobov, V. D. [SOME DATA ON THE BIOLOGY AND ECOLOGY OF POLAR FOX IN CONNECTION WITH CHARACTERISTICS OF DISTRIBUTION OF ITS BURROW IN BOLSHEZEMELSKAJA AND MALOZEMELSKAJA TUNDRA.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(3): 28-36. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 30
In Russian.

BIG GAME, GENERAL

Aleksandrova, I. V., and L. I. Krasovskii. [FOOD FOR THE MOOSE IN THE PRIOKSK-TERRAS RESERVATION.] Zool. Zhur. 39(4): 627-628. 1960. [From Biol. Abstr. 36(17), 1961, from Referat. Zhur. (Biol.), 1961, no. 1D684.] WR 104: 30
Translation [from Russian]. Original with English summary.

Andersen, Johs. (Game Biol. Station, Kalö, Rönde, Denmark.) BIOLOGY AND MANAGEMENT OF ROE-DEER IN DENMARK. Terre et Vie 108(1): 41-53, 4 figs. Jan.-Mar. 1961. WR 104: 30
In Denmark, although the landowner holds the right to shoot all game on his land, and there are no bag limits during a long open season, the attitude of sportsmen is such that the roe-deer is in no danger of becoming extinct. This deer is biologically very successful in humanly modified environments. It attains maximum populations in areas of small woods surrounded by arable lands, and such woods make up about 10% of Denmark's area. The length of woodland margin is more important than size of the woods. Agricultural crops are a prominent part of the deer's diet, and costly countermeasures are necessary to keep its damage within limits. Because roe-deer are very secretive, accurate counts have been attained only by marking-release techniques. In the Kalö research area, does averaged 1.8 fawns, mortality is almost nil from birth to autumn, and the herd increases by 70% annually. Up to the present, management practices have emphasized improvement of antler quality and attempts to increase herd size by preventing emigration or not shooting does. However, the accepted means of doing these have not led to the desired results. Improvement of antlers by selective shooting of stags with poor heads has not had any effect; actually there is no rational basis for selecting desirable types. Fencing can often be circumvented by deer, or if it is effective, it results in crowding and reduced reproduction. Roe-deer are extremely sedentary and few leave the area where they are born. Deer migrate in the ratio in which the age groups are present--the young individuals are not driven out.--From abstr. by R. M. Chew.

Avila-Pires, Fernando Dias De. SÔBRE ALGUNAS FORMAS DO GÊNERO MAZAMA RAFINESQUE, 1817 (RUMINANTIA -- CERVIDAE). [ON SOME FORMS OF THE GENUS MAZAMA.] Atas Soc. Biol. Rio de Janeiro 3(3): 7-10. 1959. [From Biol. Abstr. 36(19), 1961.] WR 104: 30
[In Portuguese.] Abstract.

Bannikov, A. G. (Museum of Zoology, Univ. Moscow.) ECOLOGIE ET DISTRIBUTION D'EQUUS HEMIONUS PALLAS; LES VARIATIONS DE SA LIMITE DE DISTRIBUTION SEPTENTRIONALE. [ECOLOGY AND DISTRIBUTION OF EQUUS HEMIONUS PALLAS; CHANGES IN THE NORTHERN LIMITS OF ITS DISTRIBUTION.] Terre et Vie 108(1): 86-100, map. Jan.-Mar. 1961. WR 104: 30
[Transl. from Russian into French by P. Pfeffer, provided without bibliography.] A review of the occurrence of the wild horse in the period of recorded history with ecological observations not previously published. The estimated northern limits of distribution from 1700 to the present are mapped. At the present E. h. onager exists in USSR only in the game preserve of Badkhyz, in extreme southern Turkmen. About 300 animals can be considered as primarily resident on 8000 km^2 in this refuge, with at least 300 entering seasonally from adjacent Afghanistan. The wild horse still "abounds" in the Transaltai-Gobi region of Mongolia. It has been forced out of northeastern China, and is probably no longer found in Inner Mongolia, but is still present in China in Alachani region of Ninsya Province and the Synzyan region farther west. The availability of open and accessible water holes is considered the principal factor determining distribution and numbers in Turkmen and Mongolia. Loss of water holes to humans or livestock has driven the wild horse from most of the regions it previously occupied. Deep snows and ice glazes may cause starvation in winter. The wild horse can be successfully reintroduced.--From abstr. by R. M. Chew.

Bannikov, A. G. (Museum of Zoology, Univ. Moscow.) L'ECOLOGIE DE SAIGA TATARICA L. EN EURASIA, SA DISTRIBUTION ET SON EXPLOITATION RATIONNELLE. [THE ECOLOGY OF SAIGA TATARICA L. IN EURASIA, ITS DISTRIBUTION AND RATIONAL EXPLOITATION.] Terre et Vie 108(1): 77-85, illus. Jan.-Mar. 1961. WR 104: 31

[Transl. from Russian into French by P. Pfeffer, provided without bibliography.] The saiga antelope was reduced to only several hundred animals at the beginning of the 1930's and apparently destined for extinction. However, the protected populations have recovered vigorously and the saiga is now first in numbers among wild ungulates in the USSR. About 500,000 saiga are present on 500,000 km^2 of range west of the Volga. Since 1951 an average of 150,000 to 200,000 have been killed annually, but the population slowly increases. About 1,500,000 saiga are present on 2,000,000 km^2 of steppe in Kazakhstan and Mongolia. Growth and survival of the herds depends on the great fecundity and precocious puberty of the females, and on the extreme mobility of the herds. [Information on reproduction, growth, diet, disease and mortality of the saiga antelope is included.]--From abstr. by R. M. Chew.

Branch of Wildlife Research. BIG GAME INVENTORY FOR 1960. US F&WS, Wildl. Leafl. 440. 4 p. Sept. 1961. WR 104: 31

Tables are shown indicating the population of big-game species and summaries of the kills for all 50 states. Of the 12 principal big-game species reported, the total kill increased from 1959 to 1960 for all but one. The total kill of white-tail deer dropped from 981,865 to 868,218, during this period, a decline of 11.6%.

Buechner, Helmut K. (Wash. State Univ., Pullman.) THE BIGHORN SHEEP IN THE UNITED STATES, ITS PAST, PRESENT, AND FUTURE. Wildl. Monog. no. 4. 1-174 p., 11 figs. May 1960. WR 104: 31

This excellent monograph is organized into five parts. The first part provides the historical perspective essential to an understanding of current status. Next the various aspects of population phenomena are considered. Of special interest is the section concerning the relationships of bighorn to vegetation and to competing animals (elk, deer, horses, domestic sheep, cattle, and feral burro). The fourth and fifth parts are concerned with current conservation practices and recommendations for future action. Although this is a large publication, its bulk would have been doubled if the tables of vegetation (175 pages) had been included. Tables 32 through 58 have been deposited as Document Number 6145 with the ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington 25, D. C. Photostatic prints of this document are available at $22.50 and 35 mm microfilm copies at $6.50.

Burckhardt, D., A. Kuster, and R. Schloeth. RECHERCHES SUISSE SUR LES ONGULES-GIBIER. [SWISS RESEARCH ON GAME UNGULATES.] Terre et Vie 108(1): 101-109. Jan.-Mar. 1961. WR 104: 31

[In French.] Populations of four species have increased tremendously since 1910: the goat (Capreolus capreolus) from 20,000 to 80,000-150,000; chamois (Rupicapra rupicapra) from 15,000 to 30,000-50,000; deer (Cervus elaphus) from 450 to 6,000-12,000; and ibex (Capra ibex) from 0 to 1,500-2,000 (reintroduced in 1911). Annual damage to forests and the expense of protecting crops against these ungulates is about $50 million. The natural composition of forests has been changed in some districts. Existing hunting regulations are not adequate from the biological point of view. In the Swiss National Park, where there has been no hunting since 1909, the four species have responded differently: (1) chamois have remained stable, in equilibrium with the food supply in their habitat; (2) ibex have slowly increased, following their introduction (apparently it takes some time for this animal to locate a suitable wintering area); (3) goats increased initially, but then declined to their original low density; (4) deer continue to increase. There is no important food competition between goats and deer in winter, when it would be important. Deer show signs of overpopulation; in wintering areas plants are browsed to destruction and there are large dieoffs in areas of high snowfall. Mortality is heaviest for fawns (up to 57%) and least for males. The rate of reabsorption of embryos and the rate of abortions is higher after a severe winter.--R. M. Chew.

Casebeer, Robert L. (Teton Natl. Forest, Jackson, Wyo.) HABITAT OF THE JACKSON HOLE ELK AS A PART OF MULTIPLE RESOURCE PLANNING, MANAGEMENT AND USE. Trans. 26th N. A. Wildl. Conf. p. 436-447, 2 figs. 1961. WR 104: 32

The elk herd of Jackson Hole has long been of national significance. All of its winter range and much of its summer range is within the Teton National Forest. Game habitat on the forest must be managed in coordination with many other resources available. Of particular importance are the watersheds. Conditions which now exist on much of the winter range and even several thousand acres of high summer range are detrimental to important watersheds, fish habitat, and carrying capacity for big game. In some instances, artificial treatment is necessary to induce recovery in a period of time deemed necessary. --Auth. abstr.

Choquette, L. P. E., J. F. Gallivan, J. L. Byrne, and J. Pilipavicius. PARASITES AND DISEASES OF BISON IN CANADA. 1. TUBERCULOSIS AND SOME OTHER PATHOLOGICAL CONDITIONS IN BISON AT WOOD BUFFALO AND ELK ISLAND NATIONAL PARKS IN THE FALL AND WINTER OF 1959-60. Canadian Vet. J. 2: 168-174. 1961. [From Vet. Bull. 31(10), 1961.] WR 104: 32

With French summary.

Couturier, A. J. ECOLOGIE ET PROTECTION DU BOUQUETIN (CAPRA AEGAGRUS IBEX IBEX L.) ET DU CHAMOIS (RUPICAPRA RUPICAPRA RUPICAPRA (L.)) DANS LES ALPES. [ECOLOGY AND PROTECTION OF THE IBEX (CAPRA AEGAGRUS IBEX IBEX L.) AND THE CHAMOIS (RUPICAPRA RUPICAPRA RUPICAPRA (L.)) IN THE ALPS.] Terre et Vie 108 (1): 54-73. Jan.-Mar. 1961. WR 104: 32

[In French.] Although they are both mountain-inhabiting ungulates, the ibex and the chamois are physiologically and ecologically different. Both are limited in their distribution by temperature, insolation and nutrient plants, and by presence of salt licks. Neither species can withstand unregulated hunting; the ibex is less wary of man than the chamois and is especially susceptible to extinction. Both species can maintain stable populations if hunting is limited to 10% harvest, and both can develop good populations from only a few introduced individuals. Present densities are one ibex per 8.5 hectares in Grand Paradise National Park, Italy, one ibex per 2 hectares in Piz Albris Reserve, Switzerland, one chamois per 10 hectares in Reserve du Mont Pleureur, Switzerland. [Information on reproduction, disease and mortality for these two species is compared. The breeding potential of the ♀ ibex is much lower than that of the ♀ chamois.]--From abstr. by R. M. Chew.

Curry-Lindahl, Kai. A NOTE ON THE MOOSE IN SWEDEN. Terre et Vie 108(1): 110-112. Jan.-Mar. 1961. WR 104: 32

Alces alces was almost extinct in 1800, but has shown remarkable ability to recover, to adapt to new environments, and to spread into previously unoccupied areas. Transformation of woodlands into cultivated lands seems to have favored the moose ecologically. The chief concern today is to keep the population within tolerable limits. In 1945 a moose census indicated a total population of about 47,000, with a hunting kill of 23.4%. The 1953 census indicated 90,000 animals, with a kill of 25,450 or 20.8%. In 1959 about 32,300 animals were killed.--R. M. Chew.

Darling, F. Fraser. (Conserv. Foundation, New York City.) AN ECOLOGICAL RECONNAISSANCE OF THE MARA PLAINS IN KENYA COLONY. Wildl. Monographs no. 5. 1-41 p. + 13 figs. Aug. 1960. WR 104: 32

Contains descriptions of the habitats found on the Mara plains and the big game found there. There are status reports on the following: wildebeest, zebra, Thomson's gazelle, impala, topi, buffalo, kongoni, giraffe, waterbuck, eland, Grant's gazelle, elephant, reedbuck, bushbuck, roan antelope, black rhinoceros, hippopotamus, and lion.

Denney, Richard N. (Colo. Dept. Game & Fish, Carbondale.) AN EVALUATION OF ELK VALIDATIONS IN COLORADO. Trans. 26th N. A. Wildl. Conf. p. 468-480. 1961. WR 104: 33

Colorado has managed most of its elk herds on a validation, or limited hunter's choice permit, system for 8 years. During this time an average of 6,659 validations per year has been issued, and license sales have increased 20%, bull kills increased 43%, cow and calf harvests have dropped 16% and 50% respectively. Total harvest has increased 9% and yearling composition in the kill has risen 4%. The validation success ratio has been 48%, and aerial trend counts generally have increased significantly in the past 8 years as compared to the 8 years prior to validations. As the number of permits in an area increase, the success ratio increases to a maximum. If validations continue to increase, the success ratio drops off generally, even though the total kill is increased. A licensed elk hunter may hunt bulls (antlered elk) in any area open to elk hunting generally during regular season, but a hunter must have a validation for a specific area to hunt an antlerless animal in that area.--From auth. abstr.

DESERT BIGHORN COUNCIL, FOURTH ANNUAL MEETING, APRIL 5-8, 1960. [vi] + 107 p., illus., mimeo. 1960. $2.00, paper, spiral bound, from Ralph Welles, Death Valley Natl. Monument, Death Valley, Calif. WR 104: 33

Twenty-three papers on the bighorn and three on the feral burro. Papers include: A bibliography of bighorn sheep, John E. Wood; Effects of climate on desert bighorn numbers, Gale Monson; The possible impact of Barbary sheep in New Mexico, Leuon Lee; Diseases and parasites of Barbary and bighorn sheep in the Southwest, Rex W. Allen; Radioactivity in bighorn sheep, Major G. R. Farmer; Management responsibilities and practices of the Bureau of Land Management as they relate to the desert bighorn sheep, Wm. L. Mathews; Developing better public support for a bighorn management program, Bill Sizer; Human encroachment on bighorn habitat, Gerald E. Duncan; Human encroachment on bighorn habitat, John B. Van den Akker; Bighorn sheep management recommendations for the state of Arizona, Warren E. Kelly; The bighorn as a multiple use animal, Al Jonez; The esthetics of bighorn management, Fred L. Jones; Information on tagging on the Desert Game Range, James R. Koplin; New developments on water requirements on the Desert Game Range, James R. Koplin; Progress in trapping and transplanting desert bighorn, Thomas Moore; Lamb survival on the Desert Game Range, Charles C. Hansen; Progress of Mexican bighorn sheep life history and management investigations in the Big Hatchet Mountains of New Mexico, Jack E. Gross; History, present and future status of the desert bighorn sheep in the Guadalupe Mts. of SE New Mexico and NW Texas, Jack E. Gross; Desert bighorn status on the Mt. Baldy District of the Angeles National Forest, Anselmo Lewis; Hunting results in Nevada, 1959, Al Jonez; Highlights of the 1959 Arizona bighorn sheep hunt, John J. Reed; Progress report on current Death Valley Burro Survey, Ralph Welles; Preliminary report of the Death Valley National Monument, Bruce Browning; Feral burro study; New developments in the use of tranquilizers, James A. Blaisdell; and Sheep and antelope in Mexico (in Spanish and English), Jose Angel Davila C.

Gill, Janusz, and Piotr Korda. UNTERSUCHUNGEN ÜBER DEN MAGENDARMKANAL DER HIRSCHZIEGENANTILOPE, ANTILOPE CERVICAPRA (LINNAEUS 1758). [INVESTIGATIONS ON THE DIGESTIVE TRACT OF THE BLACKBUCK, ANTILOPE CERVICAPRA (LINNAEUS 1758).] Acta Theriologica 4(4): 45-52 + 2 figs. on 1 pl. 20 Nov. 1960. WR 104: 33

In German with Polish summary.

Haber, A. LE SANGLIER EN POLOGNE. [THE WILD PIG IN POLAND.] Terre et Vie 108(1): 74-76. Jan.-Mar. 1961. WR 104: 33

[In French.] The populations of Sus scrofa scrofa and S. s. falzfeni in Poland were estimated as 40,000 in 1959, with a kill of 20,000 that year. It is planned to reduce the population to 30,000 by 1965, in order to reduce their damage to crops. Crop damage is being limited by plantings in the forests where the game is maintained, by artificial feeding when the snow is too deep, and by harvest of excess numbers.--R. M. Chew.

Henderson, J. B. THE DEERSTALKER'S POTENTIAL CONTRIBUTION TO BIG-GAME ANIMAL RESEARCH. New Zealand J. Forestry 8(2): 269-274, illus. 1960. [From Biol. Abstr. 36(20), 1961.] WR 104: 34

An outline of the New Zealand Deerstalkers' Association's activities is given. Methods used for collecting and recording field data are described and some conclusions as to the effectiveness of the sportsmen in animal-control work are presented.--From abstr. by W. N. Sparhawk.

Jaczewski, Z. (Dept. Exptl. Animal Breeding, Polish Acad. Sci., Popielno.) OBSERVATIONS ON THE REGENERATION AND TRANSPLANTATION OF ANTLERS IN DEER CERVIDAE. Folia Biol. 9(1): 47-99, 47 figs. 1961. WR 104: 34

In English with summaries in Polish and Russian. Includes a review of the literature on deer antlers with a bibliography of 259 items. The major portion of this paper deals with regeneration and transplantation experiments made on 14 red deer (Cervus elaphus) and to 3 fallow deer (Cervus dama).

Kindel, Fred. (Soda Springs, Idaho.) IDAHO BIGHORN SHEEP--PRIZE OF THE HUNT. Idaho Wildl. Review 14(2): 10-13, 5 figs. Sept.-Oct. 1961. WR 104: 34

A total of 338 hunters averaged five and one-half days hunting to bag 62 bighorns in 1960. Of the total hunters' observations classified as to sex and age, 13% were legal rams, 13% young rams, 52% ewes and yearlings, and 22% lambs. The non-resident bighorn hunter spent an average of $430 as compared with $106 spent by the resident bighorn hunter.

Lowe, V. P. W. (Nature Conservancy, Edinburgh, Scotland.) A DISCUSSION ON THE HISTORY, PRESENT STATUS AND FUTURE CONSERVATION OF RED DEER (CERVUS ELAPHUS L.) IN SCOTLAND. Terre et Vie 108(1): 9-40. Jan.-Mar. 1961. WR 104: 34

Article reviews the history of red deer since pleistocene in relation to changes in human culture and climate. There has been a marked reduction in the average size of stags. About 30% of the total deer land has been censused. Indicated densities are 1 deer per 12.2 hectares in deer forests and 1 deer per 34.7 hectares on marginal lands (figures do not include calves). This indicates there are 121,000 to 129,000 red deer in all of Scotland (150,000 to 160,000 including calves). The problems of conservation of red deer have become more acute in the last decade. Laws have been inadequate to prevent poaching. Most important, because sporting estates have become uneconomic, and their value as sheep pasture is limited, many of the private forests are being sold to statutory bodies and their glens are flooded or fenced and reforested. These glens are the winter feeding areas of red deer. It is suggested that: (1) an annual cropping of 13-14% can be sustained, (2) the soil nutrient cycle in lands grazed by deer (and sheep) can be restored only by protective reforestation. Present alternatives in management are: (1) maintaining populations at a maximum but declining level, with increased cropping, particularly of hinds, or (2) reduction of the deer population (and sheep) to a level compatible with the natural productivity of the soil, so as to prevent further impoverishment of the soils. This leads to a land policy of more trees (or cellulose) production and less grazing animal (protein) production.--From abstr. by R. M. Chew.

Morozov, Y. F. [THE BIOLOGY OF DICTYOCAULIDS FROM WILD UNGULATES OF THE BYELOVEZHA (BIALOWIEŻA) FORESTS.] Papers presented to K. I. Skryabin, Moscow Izdat. Akad. Nauk SSSR: 243-246. 1958. [From Helminthol. Abstr. 30(3), 1961.] WR 104: 34

In Russian. Dictyocaulus viviparus infection was observed in 23 of 32 bison, and D. eckerti in red deer and roe-deer. The worms recovered from deer kept in enclosures were smaller than those from free deer.--From abstr. by N. Jones.

Morrison, John A. (Idaho Dept. Fish & Game, Boise.) CHARACTERISTICS OF ESTRUS IN CAPTIVE ELK. Behaviour 16(1-2): 84-92. 1960. WR 104: 34

In English with German summary. Elk may remain in heat for 17 hours and the average interval of recurrent estrus was 21.2 days.

Picton, Harold D. (Mont. Fish & Game Dept., Great Falls.) DIFFERENTIAL HUNTER HARVEST OF ELK IN TWO MONTANA HERDS. J. Wildl. Mgmt. 25(4): 415-421. Oct. 1961. WR 104: 35

Summary: An analysis of information from 254 tag returns from known-age elk suggested a disproportionate harvest of males from both herds. The most heavily harvested group in the Judith River herd appeared to be the yearling males. Tag loss or natural mortality of newborn calves apparently contributes to the discrepancy between the predicted and actual kill for the Sun River herd. Males made up 50.4 percent of 472 Sun River calves tagged. There was considerable apparent variation in the sex ratios of calves tagged during the 24-yr. study period. The maximum longevities were two 18-1/2-yr.-old cows and a 13-1/2-yr.-old bull from the Sun River herd.

Sowls, Lyle K. (Ariz. Coop. Wildl. Res. Unit, Tucson.) HUNTER-CHECKING STATIONS FOR COLLECTING DATA ON THE COLLARED PECCARY (PECARI TAJACU). Trans. 26th N. A. Wildl. Conf. p. 496-505, 1 fig. 1961. WR 104: 35

Six hundred thirty-six peccaries were examined at hunter checking stations between 1957 and 1960. An additional 506 skulls were examined at taxidermy shops. This sample of 1142 were classified according to sex and age. Animals through 21-1/2 months of age were classed into five age categories according to the tooth eruption pattern. Beyond 21-1/2 months of age they were placed in five categories according to the wear pattern on the teeth. No definite age has yet been assigned to these wear classes. When compared with the more common big-game animals, the gathering and interpretation of biological data on the peccary offers new problems. The peccary has a year-round breeding season which complicates the classification of age cohorts of the population. Considerable bias in hunter selection exists because some hunters take small animals while others do not. Animals in the 11 through 21-1/2 month age class offered the best index to productivity. A strong influence of drought on productivity was apparent from the data collected in 1957 and 1958. Following the severe drought of 1956 only 2% of the animals examined were from the 1957 production compared with 6% the following year. In 1958 this same cohort of the population (when a year older) showed only 9% in the population as compared to 20% the following year.--From auth. abstr.

Sugden, Lawson G. (B. C. Game Dept., Williams Lake, B. C.) THE CALIFORNIA BIGHORN IN BRITISH COLUMBIA / WITH PARTICULAR REFERENCE TO THE CHURN CREEK HERD. British Columbia Dept. Recreation & Conserv. 58 p. + 5 figs. 1961. WR 104: 35

The present range of the Calif. bighorn in British Columbia is about two-thirds that of primitive times. The current population estimate is 1,200 head, the number being about equal east and west of the Fraser River. Annual movements of most Calif. bighorns are less than 20 miles, but Churn Creek sheep migrate more than 30 miles, while Riske Creek sheep do not leave their winter ranges. Sex and age composition of the different herds are given. Survival of lambs in the Churn Creek herd was low compared to other herds. Bighorns of that area rut in Nov. and lamb in late May. These events are a month later at Riske Creek. Calif. bighorns are gregarious, and average herd size appears related to the total number of sheep in the area. Food consists of 64% browse, 31% grass, and 5% forbs. Pasture sage was the most frequently eaten plant and made up 55% of all observations. Both deer and bighorn ate considerable pasture sage but food competition was not apparent. For 1920-40, the average annual harvest of bighorns has been 2 rams. For 1946-60, the annual harvest averaged 10 rams. Three-day hunting seasons have proven successful. Illegal kill was not important. Cougars prey occasionally on bighorns, but there is no evidence of coyotes, bobcats, lynx, wolves, black bears, or bald eagles attacking bighorns. There are discussions of other mortality factors, and the relationship of bighorns and land use. Management practices discussed include: control of hunting, distribution (salting), predation and ranges, and a trapping and transplanting program.--From summ.

Tong, E. H., Martin Senior, and C. R. E. Halnan. (Whipsnade Park, England.) AN OUTBREAK OF MALIGNANT CATARRH AMONG THE PÈRE DAVID DEER. Proc. Zool. Soc. London 136(3): 477-483. May 1961. WR 104: 35

White, Keith L. DIFFERENTIAL RANGE USE BY MULE DEER IN THE SPRUCE-FIR ZONE. Northwest Sci. 34(4): 118-126. Nov. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 36

Wodzicki, Kazimierz. (N. Z. Dept. Sci. Indust. Res., Wellington.) ECOLOGY AND MANAGEMENT OF INTRODUCED UNGULATES IN NEW ZEALAND. Terre et Vie 108(1): 130-157, 8 figs. Jan.-Mar. 1961. WR 104: 36

The distribution, population dynamics, effects on vegetation and soil, and control of 15 species are discussed. The red deer (Cervus elaphus) is the most successful; it has spread into the greatest variety of habitats, covers large coextensive areas, and is rivaled only by the rabbit in economic importance. The numbers of red deer have continued to increase since 1947, and its effects have influenced several other species. For example: moose (Alces alces) appear to be dying out, partly due to infiltration of red deer into their area; wapiti (Cervus canadensis) dispersal is limited by presence of adjacent red deer populations, while spread of the Japanese deer (C. nippon) and fallow deer (Dama dama) have been enhanced by modifications of the vegetation by red deer. The Japanese deer can succeed other browsing species that have reduced carrying capacity to their own detriment. Chamois (Rupicapra rupicapra) have geographically dispersed more rapidly than any other ungulate, and have occupied almost all the area suitable for them in South Island. Moose, sambar (C. unicolor), Javan rusa deer (C. timoriensis), white-tailed deer (Odocoileus virginianus), thar (Hemitragus jemlahicus), and feral horses, cattle, goats and sheep have remained restricted to local populations within short distances of their liberation point, utilizing only restricted variety of habitats. Red deer, wapiti, chamois and feral pigs have dispersed over large distances. Native vegetation has few species that can tolerate long continued grazing and trampling. Few native species are both unpalatable and capable of spreading rapidly to replace those species favored by ungulates. The result is a modification of forests to types of vegetation less efficient in erosion protection. Management has followed a sequence of: (1) protection of established populations and stocking from game farms, (2) prohibition of further liberations and lessening of protection, (3) complete removal of protection, (4) bounty systems and cheap ammunition to encourage killing of surplus animals, (5) experimentation with extermination methods other than shooting. While there has been an increase in the number of kills, there has been no decline in populations in the period 1952-8.--From abstr. by R. M. Chew.

Zabinski, Jan. A PROPOS DU BISON D'EUROPE. [COMMENTS ON THE EUROPEAN BISON.] Terre et Vie 108(1): 113-115. Jan.-Mar. 1961. WR 104: 36

[In French.] The author calls for a reactivation of the national chapters of the international society for the protection of the European Bison (S.I.P.B.). The number of countries involved has increased from the initial 5 to 15. The author proposes creation of a central European herd by merging two "wild" populations. (The herd of 30 bison near Bialowieza, Poland, with that located 12 km east in White Russia.) Only when the bison (Bison bonasus) have been returned to their natural environment, and freed of their symptoms of domestication can the species definitely be considered to have been saved from extinction. Poland, which has at least half the European bison extant, is ready to aid any scientific institution having need for specimens for research.--From abstr. by R. M. Chew.

Zadura, Jan. (Inst. Weterynarii, Puławy, Poland.) PARAMPHISTOMUM CERVI (SCHRANK, 1790) AS THE CAUSE OF A SERIOUS DISEASE IN STAGS (CERVUS ELAPHUS L.). Acta Parasitol. Polonica 8(21/32): 345-350, illus. 1960. [From Biol. Abstr. 36(19), 1961.] WR 104: 36

Polish summary.

Zwart, P., F. G. Poelma, and J. van Haaften. (State Univ., Utrecht, Netherlands.) CORYNEBACTERIUM PYOGENES-INFECTIES BIJ REEËN IN NEDERLAND. [CORYNEBACTERIUM PYOGENES INFECTION IN ROES IN THE NETHERLANDS.] Tijdschr. Diergeneesk. 86: 741-745, 3 figs. 1961. WR 104: 36

In Dutch with English, French, and German summaries. Corynebacterium pyogenes was isolated from 4 out of 26 roe-deer examined. The lesions consisted of suppurative arthritis--mainly in the front legs, and of multiple abscesses in the liver and lungs.

DEER (Odocoileus)

Bailey, Edward D. BEHAVIOR OF THE RATTLESNAKE MULE DEER ON THEIR WINTER RANGE. M.S. thesis, Mont. State Univ. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 37

Blouch, Ralph I. (Mich. Dept. Conserv., Lansing.) WINTER DEER MORTALITY ON TWO PRIVATE HUNTING CLUBS. Papers Mich. Acad. Sci., Arts & Letters 46: 277-287, 3 figs. 1961. WR 104: 37

In a survey of winter deer mortality on two areas (one with a population of 80 deer per square mile and another with a population of 65 deer per square mile) there were losses of 25.5 deer per square mile on the more heavily populated area and 20.9 on the other. Eighty per cent of the dead deer on both clubs had starved and about 7% had died of gunshot wounds. Fawns made up 69% of the starved deer on the club with the heavier loss and 84% on the other. Of the starved adults on both clubs, ♀♀ far outnumbered ♂♂ and a greater loss occurred in the older age classes of ♀♀. For fawns the sex ratio on one club was 75 ♂♂ : 100 ♀♀ and 52 ♂♂ : 100 ♀♀ on the other. Both clubs lost a third of their fall population during the winter of 1958-9. An air search following the ground survey yielded a much lower and obviously inadequate estimate of mortality.--From auth. summ.

Carroll, William M., and others. (Agr. Ext. Serv., Pa. State Univ., University Park.) DEER MANAGEMENT IN PENNSYLVANIA / A DISCUSSION GUIDE. Pa. State Univ., Coll. Agr. Ext. Serv. 20 p. [Nov. 1961.] WR 104: 37

The first 4 sections of this discussion guide offer questions that can be taken up at a series of meetings. The sections are: Deer economics and public policy, William M. Carroll; Deer and forestry, Edward P. Farrand; Deer management and recreation, Robert G. Wingard; Deer biology, populations and effects of hunting, Stanley E. Forbes; and Deer management based on research, Harvey A. Roberts. Section 6 includes suggestions on organizing and conducting public affairs discussion groups of this type.

Cook, Robert S., and James B. Hale. (Wis. Conserv. Dept., Madison.) DEER ON THE BAD RIVER INDIAN RESERVATION. Trans. 26th N. A. Wildl. Conf. p. 448-459. 1961. WR 104: 37

On the Bad River Indian Reservation in northern Wisconsin, all game is subjected to unrestricted hunting by Indians, and to hunting by whites during regular state seasons. Year-around deer hunting by Indians had no adverse effects on the hunting success of whites during the regular November deer season, on deer herd composition and productivity, or on range conditions. The combined deer kill of Indians and whites was keeping the Reservation deer herd near the carrying capacity of its range, although the portion of the herd harvested annually was small. Hunting success of white deer hunters and deer range conditions on a state management unit near the Reservation were poorer than on the Reservation, indicating that larger deer harvests on this unit and others like it should be encouraged.--James B. Hale.

Cowles, Raymond B. (Univ. Calif., Los Angeles.) WILDLIFE POPULATION CONTROL AND THE HUNTER. Natl. Parks Magazine 35(171): 4-6, illus. Dec. 1961. WR 104: 37

It is the opinion of the author that control of ungulate animals in national parks should be accomplished by use of techniques that reduce natural reproduction rather than through hunter harvests which he believes tend to eliminate the best animals and leave the poorer individuals for breeding stock.--James S. Lindzey.

Dean, Donald J. (N. Y. State Dept. Health, Albany.) STREPTOTHRICOSIS--A NEW DEER DISEASE TRANSMISSIBLE TO MAN. N. Y. Conservationist 16(2): 15, 34, 2 figs. Oct.-Nov. 1961. WR 104: 37

A previously unreported fungus disease, streptothricosis, was described from a 5-1/2 month old deer in New York State. The disease was characterized by single- or multiple-raised, whitish boils of pinhead to matchhead size on the lower legs and on the flanks, back and neck. Dermatophilus sp., a skin fungus in a group which widely affects wild and domestic animals in Africa, Asia, Australia, Europe, and South America was isolated from the pustules. Four of the ten persons who handled the deer developed boils on the dorsal surface of

one or both hands two to seven days after exposure. These subsequently healed without further complication or spread. Generalized illness was not observed. Dermatophilus sp. was also recovered from the human lesions. This report adds a new fungus disease to the zoonoses of North America.--Gordon M. Clark.

Doutt, J. Kenneth, and John C. Donaldson. (Carnegie Museum, Pittsburgh, Pa.) ANTLERED DOE STUDY. Pa. Game News 32(11): 23-25, 2 figs. Nov. 1961. WR 104: 38

Contains tabulated information on 12 antlered deer reported killed during 1960 in Pa. and a summary of antlered doe taken during 1957-60. Of the 173,038 bucks killed during the four years, 43 were reported as antlered doe deer.

Erickson, Arnold B., Vernon E. Gunvalson, Milton H. Stenlund, Donald W. Burcalow, and Lytle H. Blankenship. (Minn. Dept. Conserv., St. Paul.) THE WHITE-TAILED DEER OF MINNESOTA. Minn. Dept. Conserv., Tech. Bull. no. 5. vii + 64 p. + 24 figs. 1961. WR 104: 38

A review of 20 years' work on Minnesota's white-tails under the headings of history, distribution and numbers, natural history, food habits, sex and age, physical condition, natural factors limiting deer production, management, and aesthetic and economic values. It seems that excessive space is devoted to food habit studies, miscellaneous deer weights and mortality reports, old census methods, etc., and not enough to the reproductive capacity of the deer and expressing the need for a full harvest each year. In recent years there have been harvests ranging from 70,000 to 90,000 annually, with about a 55 : 45 ratio of bucks to does. The organization of this publication is poor--much of the material should have been relegated to an appendix. It was evidently designed to be both popular and technical and the compromise became unwieldly so as to have little appeal for either group. There is an extensive bibliography of Minnesota references to deer.--From abstracts by Stuart P. Davey and James S. Lindzey.

Fay, L. D. (Mich. Dept. Conserv., Lansing.) THE CURRENT STATUS OF BRUCELLOSIS IN WHITE-TAILED AND MULE DEER IN THE UNITED STATES. Trans. 26th N. A. Wildl. Conf. p. 203-211, 2 figs. 1961. WR 104: 38

The USDA in cooperation with the state departments of agriculture is engaged in a nationwide program to eradicate brucellosis in cattle. Deer, among other wild animals, are sometimes suspected to be reservoirs of infection to cattle. The author summarizes the published and available unpublished results of tests made in numerous states for brucellosis in deer. The test used in most instances was the seragglutination test. Results were interpreted in the manner accepted for cattle. Serum antibody titers of 1 : 25, 1 : 50 and 1 : 100 were read as negative, suspicious and reactor (infected), respectively. Twenty (0.16%) of 12,706 white-tailed deer (Odocoileus virginianus) tested in 24 states were reactors. No mule deer (Odocoileus hemionus) of 1,046 tested in four states and no undesignated deer (white-tailed and mule deer) of 2,989 tested in five states reacted to the test. The author concluded that brucellosis is comparatively rare in deer in the U. S. and that it is an unimportant disease from the standpoint of the health of the deer or of deer as a reservoir of infection to livestock.--Auth. abstr.

Ferris, D. H., L. E. Hanson, H. E. Rhoades, and J. O. Alberts. (Univ. Ill., Urbana.) BACTERIOLOGIC AND SEROLOGIC INVESTIGATIONS OF BRUCELLOSIS AND LEPTOSPIROSIS IN ILLINOIS DEER. J. Am. Vet. Med. Assoc. 139(8): 892-896, 2 figs. 15 Oct. 1961. WR 104: 38

During 1958-60, a total of 3,673 deer serum samples collected in Ill. from 47.5% of the deer killed during 3 hunting seasons were tested for brucellosis and leptospirosis reactors. At the 1 : 200 dilution, 6.94% were positive to Leptospira pomona, 6.09% to L. grippotyphosa, 1.38% to L. ballum; a few reactors to L. sejroe, L. icterohaemorrhagiae, L. canicola, and L. hyos were also found. Only one brucellosis reactor in 1958 and 7 in 1959 were found.--From summ.

Harlow, Richard F. FALL AND WINTER FOODS OF FLORIDA WHITE-TAILED DEER. Quart. J. Fla. Acad. Sci. 24(1): 19-38. 1961. [From Biol. Abstr. 36(17), 1961.] WR 104: 39

Twenty-one plant species amounted to 83.7 percent of the total volume of the 193 food items found present. Those food items occurring in the first ten preferred foods during the course of the study included Quercus spp. (acorns), Basidiomycetes (entire), Trilisa odoratissima (basal leaves), Serenoa repens (berries), Ilex glabra (leaves, twigs, and berries), Itea virginica (leaves and twigs), Smilax spp. (leaves, vines, and berries), and Cliftonia monophylla (leaves, twigs). Where oaks and palmettos are present in deer habitat oak acorns and palmetto berries constitute a major portion of the deer's diet. In flat-woods and pine-oak uplands habitats Basidiomycetes are an important deer food. In Everglades deer range (freshwater marshes) forbes, mainly hydrophytic, were utilized in greatest quantity with woody plants second.--From abstr. by R. F. Harlow.

Hubbard, R. L., and E. J. Woolfolk. (Pacific SW Forest & Range Expt. Sta., Hubbard, Calif.) DEER RANGE MANAGEMENT--A COMPLEX BUSINESS. Outdoor Calif. 22(6-7): 11-14, 4 figs. June-July 1961. WR 104: 39

A review of deer range improvement and management techniques. "No single tool can be relied upon to solve all the problems encountered in deer habitat management. Many times the tool best suited for a particular situation is the very worst for another."

Jenkins, D. H. (1906 Gordon Ave., Lansing 10, Mich.) DEER IN 1961. Mich. Dept. Conserv., Game Div. Inf. Circ.-125. 14 p., illus. July 1961. WR 104: 39

There were far fewer hunters in 1960 as compared with the record high in 1959. The buck kill was down about 31% and the antlerless deer kill dropped 39% from the kill in 1959. In 1960 hunting was poor in areas where does had been shot previously as well as in other areas where does had been protected. There was a definite shortage of young adult ♂♂ in the fall (1960) and deer were in generally poor condition following 2 severe winters. The winter of 1960-1 was mild, little overbrowsing of the range occurred, and the 1961 fawn crop was good.--From auth. summ.

Larimer, Edward J. (Rt. 2, Lenoir, N. C.) HOW MANY FAWNS? Wildl. in N. C. 25(9): 4-6, 3 figs. Sept. 1961. WR 104: 39

Popular report of a 4-year ovarian study of deer in North Carolina. Fawn production on 5 closely controlled management areas varied widely. For these areas there are kill records, population figures, measurement and weight data, and range survey information which serve as checks on the ovarian analysis findings.

McCullough, Dale Richard. AN ECOLOGICAL STUDY OF THE COLUMBIAN BLACK-TAILED DEER IN A LOGGED ENVIRONMENT. M.S. thesis, Oreg. State Univ. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 39

Thilenius, John Fredrick. FORAGE UTILIZATION BY CATTLE AND WHITE-TAILED DEER ON A NORTHERN IDAHO FOREST RANGE. M.S. thesis, Univ. Idaho. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 39

Verme, Louis J. (Cusino Wildl. Expt. Sta., Shingleton, Mich.) PRODUCTION OF WHITE-CEDAR BROWSE BY LOGGING. J. Forestry 59(8): 589-591. Aug. 1961. WR 104: 39

The yield of white-cedar browse made available to deer, by logging an all-aged, mature northern white-cedar stand, varied directly with the intensity of cut. Clearcutting produced the greatest yield (approximately 5,340 pounds of browse per acre). Cutting to a 10-inch minimum stump limit produced only 2,530 pounds. This amount of browse would be sufficient to nourish about 11 and 5 deer respectively during 100 days of winter.--From auth. summ.

DEER (ODOCOILEUS)--Continued

White, Robert W. (Ariz. Coop. Wildl. Res. Unit, Tucson.) SOME FOODS OF THE WHITE-TAILED DEER IN SOUTHERN ARIZONA. J. Wildl. Mgmt. 25(4): 404-409. Oct. 1961. WR 104: 40

Food habits of white-tailed deer in southeastern Ariz. were studied in 3 desert mountain ranges by the feeding-minute technique. In the lower elevations, leguminous browse species of Calliandra, Mimosa, and Krameria were found to be key plants, and should be studied when evaluating range conditions in this region. Influence of spring drought on requirement for succulent vegetation is indicated by the pattern of use of Fouquieria. Forbs were taken most heavily in the higher altitudes.--From auth. summ.

Wolfe, Carl William. STUDIES OF THE NUTRITIONAL NEEDS OF MALE WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS) AND OF THE NUTRIENT CONTENT OF VARIOUS SPECIES OF BLUEBERRY (VACCINIUM). M.S. thesis, Pa. State Univ. 1960. [Osborn and others. Forest Sci. 7(3), 1961.] WR 104: 40

MAMMALS--MARINE

Bel'kovich, V. M., and R. Sh. Khuzin. [THE ATLANTIC WALRUS. (TO SAVE AND INCREASE A VALUABLE ANIMAL OF THE NORTH).] Priroda 2: 67-69. 1960. [From Biol. Abstr. 36(17), 1961, from Referat. Zhur. (Biol.), 1961, no. 2D588.] WR 104: 40

[In Russian.]

Berzin, A. A. [FOOD OF THE SPERM WHALE IN THE BERING SEA.] Izvest. Tikhookeansk. Nauch.-Issled. Inst. Rybn. Khoz. i Okeanol. 47: 161-165. 1959. [From Biol. Abstr. 36(19), 1961, from Referat. Zhur. (Biol.), 1961, no. 5D647.] WR 104: 40

Translation [from Russian]. Of 110 whale stomachs studied, 69 (64.4%) contained only squid; 28 (26.2%) contained squid and fishes; and 10 (9.4%) contained only fishes. Species composition of food was examined. Sperm whale's diet in the Bering Sea is less diversified than around the Kurile Islands. The farther removed whales are from the region of the Commander Islands to the E, and to the N, the greater are the number of slightly filled and empty stomachs and the more predominant are fishes in the food supply.

Chapman, Douglas G. (Univ. Wash., Seattle.) POPULATION DYNAMICS OF THE ALASKA FUR SEAL HERD. Trans. 26th N. A. Wildl. Conf. p. 356-369, 1 fig. 1961. WR 104: 40

The Alaska fur seal herd, near extinction in 1911, recovered rapidly when a conservation program was inaugurated. The apparently stable ceiling that the herd size had reached in the period around 1950 has subsequently given way to larger fluctuations and generally decreasing survival in the youngest age groups. Some of the recent developments are briefly reviewed. A simple model is developed on the premise that reduced survival is due to pressure on the food supply around the islands which affects the survival of the seal pups in their first year. Two equations are estimated for the relationship between pup population and survival to age three. While the two equations are based on different models, the results are in close agreement. The consequences of this estimated relationship are examined.--Auth. abstr.

Craggs, J. D., and N. F. Ellison. OBSERVATIONS ON THE SEALS OF THE (WELSH) DEE ESTUARY. Proc. Zool. Soc. London 135(3): 375-385, 2 pls. 14 Nov. 1960. WR 104: 40

Fujino, Kazuo. IMMUNOGENETIC AND MARKING APPROACHES TO IDENTIFYING SUB-POPULATIONS OF THE NORTH PACIFIC WHALES. Sci. Repts. Whales Res. Inst. (Tokyo) 15: 85-142. Nov. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 40

Gilmore, Raymond M. A CENSUS OF THE CALIFORNIA GRAY WHALE. US F&WS Spec. Sci. Rept.: Fisheries no. 342. iv + 30 p., 15 figs. May 1960. WR 104: 41
Includes sections on the taxonomy, distribution, migration, behavior studies, reproduction, mortality, and history of the gray whale. Methods and results of shore census and aerial surveys are given for the period 1952-7. The estimated population based on shore counts during their southward migration was 2,894 in 1952-3 and 4,454 in 1956-7. Aerial surveys of the winter range indicate that most of the whales are concentrated in 3 areas: Vicaíno-Scammon, San Ignacio, and Magdalena.

Gilmore, Raymond M. CENSUS AND MIGRATION OF THE CALIFORNIA GRAY WHALE. Norsk Hval.-Tid. (Norwegian Whaling Gazette) 49(9): 409-410, 413-414, 417-418, 420, 423-431, illus., maps. 1960. [From Polar Record 10(69), 1961.] WR 104: 41
"Rhachianectes glaucus. Results of censuses from 1951; hypothetical migration paths following ocean currents. In English and Norwegian."

Ichihara, Tadayoshi. BLUE WHALES IN THE WATERS AROUND KERGUELEN ISLAND. Norsk Hval.-Tid. (Norwegian Whaling Gazette) 50(1): 1-16, 18-20, illus. 1960. [From Polar Record 10(69), 1961.] WR 104: 41
"Analysis of catch of Balaenoptera musculus by Japanese whaling fleet March 17-26, 1960: body colour, size distribution, body proportions, sexual maturity, pregnancy and foetuses, baleen plates and food, age composition, occurrence."

Khuzin, R. Sh. [CAPTURE AND PRESERVATION OF POLAR BEAR.] Priroda (10): 54-56, illus. 1960. [From Polar Record 10(69), 1961.] WR 104: 41
[In Russian.] "Thalarctos maritimus. Method of capturing cub alive without killing mother."

Kondakov, N. N. [SYSTEMATIC STATUS OF THE BAYKAL SEAL.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 120-121, illus. 1960. [From Polar Record 10(69), 1961.] WR 104: 41
[In Russian.] "Phoca sibirica."

Lilly, John C. MAN AND DOLPHIN. Doubleday & Co., Inc. 312 p., illus. 1961. $4.95. WR 104: 41
The reader is taken behind the scenes to share the author's experiences in one of the newest frontiers of science in this fascinating popular account of the results of current interspecies communication research. He finds that the dolphin (because of brain size, body size, friendly attitude toward humans, and power of vocalizing) is a better animal to work with in this field than the cat or the monkey. The problems of setting up the laboratory, training the dolphins, mapping their brains, recording their voices, etc., are narrated in an intimate manner. The entire book (including the three technical appendices dealing with dolphin anatomy, intellect and intelligence, and the origins of dolphins and men) is readable. The most thought provoking chapter entitled "Implications" considers the philosophical, scientific, ethical, legal, social, military, propaganda, utilitarian, and humorous implications of communication between dolphins and men. These investigations have stimulated at least one science fiction story: The voice of the dolphin by Leo Szilard. The criticism can be raised that this book was published too early and that it is a premature progress report. It can also be argued that the publication of these preliminary results will evoke comments and criticism which will be beneficial in further study. [Two technical papers by Lilly and Miller -- WR 103: 34 and WR 104 (see below) -- supplement this book. The latter reports on progress subsequent to this book.]

Lilly, John C., and Alice M. Miller. (Communication Res. Inst. of St. Thomas, Miami, Fla.) VOCAL EXCHANGES BETWEEN DOLPHINS / BOTTLENOSE DOLPHINS "TALK" TO EACH OTHER WITH WHISTLES, CLICKS, AND A VARIETY OF OTHER NOISES. Science 134(3493): 1873-1876, 3 figs. 8 Dec. 1961. WR 104: 41
Observations of the vocal exchanges of bottlenose dolphins under various conditions are presented. Experimental conditions under which isolated emissions from each animal of a pair are separately recorded and in which the distance between the rostrum and the hydrophone is controlled are described.--From auth. abstr.

McLaren, Ian A. (Arctic Unit, Fisheries Res. Board of Canada, Montreal.) METHODS OF DETERMINING THE NUMBERS AND AVAILABILITY OF RINGED SEALS IN THE EASTERN CANADIAN ARCTIC. Arctic 14(3): 162-175, 4 figs. Sept. 1961. WR 104: 42

Field census methods for use from shipboard and for seals based on fast-ice areas are developed which take into consideration limits of visibility, the habits of the seals, and other factors. There is also a consideration of availability. "Availability, for any given set of conditions and method of hunting, is directly related to seal density, which is in turn a function of both population size and the area in which the population is dispersed."

Nishiwaki, Masaharu. RYUKYAN HUMPBACK WHALING IN 1960. Sci. Repts. Whales Res. Inst. (Tokyo) 15: 1-15. Nov. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 42

Stump, C. W., J. P. Robins, and Mary L. Garde. THE DEVELOPMENT OF THE EMBRYO AND MEMBRANES OF THE HUMPBACK WHALE, MEGAPTERA NODOSA (BONNATERRE). Australian J. Marine & Freshwater Res. 2(3): 365-386, 15 pls. Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 42

Tokita, Kikuji, and ECG Res. Group. ELECTROCARDIOGRAPHICAL STUDIES ON BOTTLE-NOSED DOLPHIN (TURSIOPS TRUNCATUS). Sci. Repts. Whales Res. Inst. (Tokyo) 15: 159-165. Nov. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 42

Van Utrecht, W. L. NOTE ON THE "HERMAPHRODITE SPERM WHALE." Norsk Hval.-Tid. (Norwegian Whaling Gazette) 49(11): 520. Nov. 1960. [From J. Mammal. 42 (3), 1961.] WR 104: 42

Van Utrecht, W. EINIGE NOTIZEN ÜBER GEWICHT UND LÄNGE VON SCHWEINSWALEN (PHOCAENA PHOCAENA) AUS DER NORD- UND OSTSEE. [SOME NOTES ON WEIGHTS AND MEASUREMENTS OF THE HARBOR PORPOISE (PHOCAENA PHOCAENA) IN THE NORTH AND EAST SEAS.] Säugetierk. Mitteil. 8(3-4): 142-144. 1 Dec. 1960. [From J. Mammal. 42(3), 1961.] WR 104: 42

[In German.]

MAMMALS--OTHER GROUPS

Crites, John L. (Ohio State Univ., Columbus.) A NOTE ON HELMINTHS OF THE OPOSSUM DIDELPHIS MARSUPIALIS VIRGINIANA. Bio-Briefs 2: 4. 1961. [From Biol. Abstr. 36(21), 1961.] WR 104: 42

Six nematodes, one cestode, and one trematode are listed from the opossum, Didelphis marsupialis virginiana, from Ohio.--Author.

Pilleri, G. (Hirnanatomisches Inst., Waldau/Bern, Switzerland.) BEWEGUNGS-STEREOTYPIEN BEIM NORDAMERIKANISCHEN OPOSSUM (DIDELPHIS MARSUPIALIS, MARSUPIALIA). [STEREOTYPED BEHAVIOR IN THE NORTH AMERICAN OPOSSUM (DIDELPHIS MARSUPIALIS, MARSUPIALIA).] Rev. Suisse Zool. 67(4): 519-521. Dec. 1960. WR 104: 42

[In German.] Stereotyped activity by one young female occurred for hours every day as long as the animal was kept on a reversed sleeping rhythm (caged at night, freed to feed in daytime) and was unable to get into a dark shelter during the daytime.--R. M. Chew.

BIRDS--GENERAL

Berger, Andrew J. BIRD STUDY. John Wiley & Sons (New York). xi + 389 p., illus. 1961. $9.00. WR 104: 42

As stated in its preface, Bird Study was prepared to serve as the basis for a one-semester course in ornithology for liberal arts students. Its eleven chapters afford glimpses of most of the general areas of modern ornithological thought. The chapters cover the following subjects: introducing the bird, field identification, bird habitats, migration, behavior, song, courtship and nest building, eggs and young, structure and function, conservation, and systematics. Because of the broad coverage attempted and practical limits on

the size of the book, the treatment is necessarily sketchy. Unfortunately, however, the space does not always appear to have been wisely utilized. For example, six pages (174-179) are used to present audiospectographs of songs of three species, but there is only one sentence which might aid the reader in the interpretation of the audiospectographs. It is stated that the graphs give data on loudness of the songs, but it is not stated how loudness is to be read from the graphs. It appeared that examples were not always well chosen. In the section on water conservation (312-315), for example, the discussion involves fish ecology and importance of water to industry. The present plight of waterfowl would appear to have been worthy of mention and to have been a much more appropriate example. Bird Study does not maintain the high standard of excellence set by Andrew Berger and the late Joselyn Van Tyne in their earlier work on Fundamentals of Ornithology.--Paul A. Stewart.

Rand, A. L. (Chicago Nat. Hist. Museum, Chicago 5, Ill.) SOME SIZE GRADIENTS IN NORTH AMERICAN BIRDS. Wilson Bull. 73(1): 46-56. Mar. 1961. WR 104: 43

The only effect for which there is evidence enough to be convincing is that decreasing temperature correlates with larger wing and weight, and this is true only in eastern North America. There is some evidence that suggests that relatively longer-winged (or lighter bodied) western representatives of birds may occur in the more open habitats there (which last may be correlated with aridity), where more flying is involved in the daily life of the bird. This points up the fact that wing length is not always an indicator of body weight within a species, especially when birds from quite different environmental conditions are compared. More than one factor could be in operation at one time, working in different directions, canceling, or modifying each other.--From auth. summ. and concl.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Arn-Willi, Hans. (Wildbachstrasse 19, Solothurn, Switzerland.) NESTVERHALTEN DES ALPENSEGLERS, APUS MELBA. [NESTING-BEHAVIOR OF THE ALPINE SWIFT, APUS MELBA.] Proc. Intern. Ornithol. Congr. 12: 50-54, 3 figs. 1958 [1960]. WR 104: 43

In German.

Aschoff, Jürgen, and Dietrich V. Holst. (Max Planck Inst., Heidelberg, Germany.) SCHLAFPLATZFLUGE DER DOHLE, CORVUS MONEDULA L. [THE EVENING ROOST FLIGHT OF THE JACKDAW, CORVUS MONEDULA L.] Proc. Intern. Ornithol. Congr. 12: 55-70, 5 figs. 1958 [1960.] WR 104: 43

In German.

Berndt, Rudolf, and Peter Dancker. (Braunschweig, Germany.) ANALYSE DER WANDERUNGEN VON GARRULUS GLANDARIUS IN EUROPA VON 1947 BIS 1957. [ANALYSIS OF THE MIGRATION OF GARRULUS GLANDARIUS IN EUROPE DURING 1947-1957.] Proc. Intern. Ornithol. Congr. 12: 97-109, 4 figs. 1958 [1960]. WR 104: 43

In German. During the period 1947-57 there was a major invasion of jays in 1955, a minor one in 1947, and declines in 1951 and 1954.

Bruns, Herbert, and Hildegard Nocke. UBERWINTERUNG, ERSTANKUNFT UND SANGESBEGINN DES STARS (STURNUS VULGARIS) IN DEUTSCHLAND 1948-1957. [WINTER RESIDENCE, FIRST ARRIVALS AND INITIATION OF SONG BY STARLINGS IN GERMANY.] Ornithol. Mitteil. 13(3): 41-53. 1961. [From Biol. Abstr. 36(16), 1961.] WR 104: 43

[In German.] Tabulation of more than 1000 dates for song of starlings in various parts of Germany from 1948 till 1957 shows earliest dates in the region of the Rhine and Lower Saxony and the latest in northern Germany. Many starlings spend the winter in Germany.--D. E. Davis.

Clark, George A. (Yale Univ., Conn.) OCCURRENCE AND TIMING OF EGG TEETH IN BIRDS. Wilson Bull. 73(3): 268-278. Sept. 1961. WR 104: 43

Review paper with 79 references. Extensive rather than intensive.

Davison, Verne E. (SCS, Athens, Ga.) FOOD COMPETITION BETWEEN GAME AND NON-GAME BIRDS. Trans. 26th N. A. Wildl. Conf. p. 239-246. 1961. WR 104: 44

Summary: Choice foods can be provided for game birds, but competition from non-game species that gather in large flocks is a serious problem in the Southeastern States in fall and winter. Fifteen species of flocking birds are significantly destructive of game-bird foods. Forty-six game-bird foods are discussed with emphasis on their suitability for management. The problem of their deterioration by rot, mold, and sprouting is discussed as a second limiting factor. The foods to favor for bobwhites, mourning doves, wild ducks, and turkeys are suggested. The problem of feeding game bird species better, in spite of flocking non-game birds and weather deterioration, is not insurmountable, however. It simply needs careful attention.

Farner, D. S. METABOLIC ADAPTATIONS IN MIGRATION. Proc. Intern. Ornithol. Congr. 12: 197-208, 5 figs. 1958 [1960]. [From Ibis 103a(2), 1961.] WR 104: 44

"Photoperiodically controlled mechanisms which cause the development of hyperphagia prior to and during migration have been evolved. The hyperphagia is responsible for the energy surplus available, the intermediary metabolism being adjusted so that this surplus is stored as fat.... Fat increments are characteristic of pre-migratory and migratory periods and have the advantage of maximum energy storage with minimum increase in body weight. Vernal migration and its associated changes in metabolism are inserted between the prenuptial moult and development of reproductive activity, both of which are also photoperiodically controlled."--C.M.P.

Hartman, Frank A., and Katharine A. Brownell. (Ohio State Univ., Columbus.) LIPIDS IN THE LOCOMOTOR MUSCLES OF BIRDS. Condor 63(5): 403-409. Sept.-Oct. 1961. WR 104: 44

The lipid content of the pectoralis was determined in 104 spp. of birds representing 42 families. All but 3 spp. were collected in Panama.--From summ.

Horváth, L. (Hungarian Natl. Museum, Budapest.) THE LIFE OF THE LESSER GREY SHRIKE (LANIUS MINOR GM.) IN THE GREAT PLAINS BETWEEN THE VILLAGES ALSÓNÉMEDI AND ÓCSA, NEAR BUDAPEST, HUNGARY. Proc. Intern. Ornithol. Congr. 12: 317-326. 1958 [1960.] WR 104: 44

Observations are grouped under the following categories: spring arrival, courtship and mating, construction of the nest, eggs, incubation, fledging period, enemies and destruction of the fledglings, note and song, companion-birds of the research area, and departure.

Johnsgard, Paul A. (Univ. Nebraska, Lincoln.) THE SEXUAL BEHAVIOR AND SYSTEMATIC POSITION OF THE HOODED MERGANSER. Wilson Bull. 73(3): 227-236, 2 figs. Sept. 1961. WR 104: 44

The courtship and copulatory behavior patterns of the hooded merganser are described, and probable homologies are pointed out with other Mergus species and with Bucephala.--From summ.

Keast, Allen. (Australian Museum, Sydney.) BIRD ADAPTATIONS TO ARIDITY ON THE AUSTRALIAN CONTINENT. Proc. Intern. Ornithol. Congr. 12: 373-375, 5 figs. 1958 [1960]. WR 104: 44

Kilham, Lawrence. (Lyme, N. H.) REPRODUCTIVE BEHAVIOR OF RED-BELLIED WOODPECKERS. Wilson Bull. 73(3): 237-254, 4 figs. Sept. 1961. WR 104: 44

Sections deal with: methods of communication, early breeding behavior, conflicts over nest holes and territory, incubation period, nestling stage, parents and young after nest leaving, second nestings, breeding behavior in captivity, copulatory behavior, incubation and care of young, drumming, and unusual behavior.

Markgren, Martin. FUGITIVE REACTIONS IN AVIAN BEHAVIOUR. Acta Vertebrata (Stockholm) 2(1): 9-160, illus. 1960. 25 KR. WR 104: 45

Based on a quarter of a century of field studies of wild birds in Fenno-scandia. "The first part of the paper deals with avian reactions to disturbance phenomena ("disturbances") with a character of individuality and often with a spatial direction and a tendency towards momentaneousness. The second part treats fugitive responses to disturbing qualities of the bird's environments, such as unfavourable weather changes.... Most fugitive behaviour is composed of many single reactions and may overlap with different kinds of behaviour. Fugitive behaviour may, like any other sort of behaviour, be treated from ethological, ecological or genetic aspects."--From auth. summ.

Marshall, A. J. (Monash Univ., Victoria, Australia.) THE ROLE OF THE INTERNAL RHYTHM OF REPRODUCTION IN THE TIMING OF AVIAN BREEDING SEASONS, INCLUDING MIGRATION. Proc. Intern. Ornithol. Congr. 12: 475-482. 1958 [1960]. WR 104: 45

"The most important single--and only universal--factor in the regulation of avian breeding seasons, including migration, is the internal rhythm of reproduction that is annually and spontaneously renewed after a period of regeneration that follows each breeding season. The time of reactivation is very nearly regular within each species but it varies greatly between species."--From summ.

Mayfield, Harold. (River Road, RFD, Waterville, Ohio.) NESTING SUCCESS CALCULATED FROM EXPOSURE. Wilson Bull. 73(3): 255-261. Sept. 1961. WR 104: 45

A lucid explanation of a technique used in the analysis of nesting success of Kirtland's warbler. After mortality and survival rates are expressed per nest-day, the probability of survival may be calculated for all or any part of the nesting period. The probabilities of survival in different stages of nesting may be combined through the mathematical principle that the probability of a succession of events is the product of their separate probabilities.--From summ.

Miller, Alden H. (Univ. Calif., Berkeley.) ADAPTATION OF BREEDING SCHEDULE TO LATITUDE. Proc. Intern. Ornithol. Congr. 12: 513-522, 1 fig. 1958 [1960]. WR 104: 45

Oriens, Gordon H. (Dept. Zool., Univ. Wash., Seattle 5.) THE ECOLOGY OF BLACKBIRD (AGELAIUS) SOCIAL SYSTEMS. Ecol. Monographs 31(3): 285-312. Summer 1961. WR 104: 45

This Calif. study concerns differences in the social organization of the closely related and morphologically similar red-winged blackbird (Agelaius phoeniceus) and tricolored blackbird (A. tricolor). Both species are highly gregarious. The redwing is migratory, the tricolor non-migratory, but nomadic. Outside of the breeding season mixed flocks of redwings and tricolors are common. At some seasons roosts are often in the same habitat and shared by both species. In nesting the tricolor has a colonial system, the redwing a territorial system. The tricolor forms immense nesting colonies often numbering 50,000 to 100,000 nests. Food supply is a critical factor in the location and size of tricolor nesting colonies, which may shift from one year to the next accordingly. Although nesting for both species begins in late April and early May, the ♂ redwing begins to establish territories in Jan., while the ♂ tricolor defends a territory for only the week of nest building. The ♂ and ♀ tricolor feed the young, while the ♂ redwing rarely takes part in this activity. Extreme synchrony is characteristic of most tricolor colonies, whereas in redwing colonies nesting extends over long periods of time. "The colonial system of the Tricolor is more demanding of energy but less demanding of time than the territorial system of the Redwing.... In the Redwing, territorial behavior strongly limits density, forcing part of the population into less suitable areas and probably totally preventing some individuals from breeding.... In the tricolored blackbird, territories are uniformly small unless the vegetation is not dense enough to permit such a high concentration of nests. Territorial behavior does not limit density. Instead, the important variable, colony size, changes with environmental conditions." The evolution of mating systems and social systems is discussed.--Brooke Meanley.

Toschi, Augusto. (Univ. Bologna, Italy.) LA NIDIFICAZIONE IN ITALIA DELLA CICOGNA BIANCA, DEL MIGNATTAIO E DEL GABBIANO COMUNE. [NESTING IN ITALY OF THE WHITE STORK, THE GLOSSY IBIS, AND THE BLACK-HEADED GULL.] Ricerche di Zool. Applicata alla Caccia 32. 18 p., 6 figs. on 3 pls. 1960. WR 104: 46
In Italian with summaries in English, French, and German.

Turček, F. J. (Forest Res. Inst., Banská Štiavnica, Czechoslovakia.) THE PROPORTIONS OF PLUMAGE, ORGANIC MATTER AND WATER CONTENT IN THE BODIES OF SOME BIRDS. Proc. Intern. Ornithol. Congr. 12: 724-729. 1958 [1960]. WR 104: 46
Based on a study of 51 specimens of 25 spp. of birds. The results indicate a negative correlation between the amount of plumage and body size. The water content averaged 67% but was highly variable. The ratio of organic matter was relatively high accounting for 88% of the dry matter of the body. It is recommended that the amount of organic matter in the bodies of birds should be used to express the true biomass instead of total weight.

Wallraff, H. G. ÖRTLICH UND ZEITLICH BEDINGTE VARIABILITÄT DES HEIMFINDE-VERHALTENS VON BRIEFTAUBEN. [LOCAL AND TEMPORAL VARIABILITY OF HOMING IN PIGEONS.] Z. Tierpsychol. 16: 513-544. 1959. [From Ibis 103a(2), 1961.] WR 104: 46
[In German] with English summary. "The time for which pigeons were in sight at point of release, initial orientation, homing performance and place of recovery of lost pigeons are discussed. In general, 20 sec. after release, pigeons show a definite homeward trend. Initial orientation is positively correlated with homing performance; both differ at different release points (local effect) and on the whole initial orientation deviates from the true home direction to the north; both may differ from day to day, and initial orientation from hour to hour, although this cannot be explained fully by the weather conditions; homing performance is best in August and least good in January, but does not appear to be connected with the breeding cycle. Optical landmarks and celestial clues are thought not to be sufficient to explain homing ability."--U.W.

Wallraff, H. G. ÜBER DEN EINFLUSS DER ERFAHRUNG AUF DAS HEIMFINDEVERMOGEN VON BRIEFTAUBEN. [ON THE INFLUENCE OF EXPERIENCE ON HOMING IN PIGEONS.] Z. Tierpsychol. 16: 424-444. 1959. [From Ibis 103a(2), 1961.] WR 104: 46
In German with English summary. Based on more than 2,000 flights of homing pigeons. The points of release were at distances between 10 km and 50 km. "With increasing number of flights homing success increases first rapidly then more slowly but differs for different release points. Initial orientation also depends on experience, but conditioning to a particular homing direction from one release point may influence releases from other points. Local experience of release points has no influence on initial orientation. Even for 'short distance orientation' topographical features apparently do not give essential clues."--U.W.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Belcher, Margaret. (Regina Coll., Regina, Saskatchewan, Canada.) BIRDS OF REGINA. Saskatchewan Nat. Hist. Soc., Spec. Publ. no. 3. iv + 76 p., illus. 1961. Price $1.00. WR 104: 46
Includes annotated species accounts of the 268 spp. of birds distributed in the 5 types of habitat found within 15 miles of Regina (Saskatchewan). Notes are supplied for each species on the status, preferred habitat, and earliest arrival dates to the area.

Ligon, J. Stokley. NEW MEXICO BIRDS / AND WHERE TO FIND THEM. Univ. N. Mex. Press (Albuquerque). xxi + 360 p., 86 figs. + 34 color pls. 1961. $8.50. WR 104: 47

This volume is intended to replace Florence Merriam Bailey's "Birds of New Mexico" (1928), which has long been out of print. Observations through 1958 (1 on 31 Oct. 1959) are included under Distribution and Nesting headings. Ligon's "more simplified approach" was intended to lend "greater appeal to bird studies for those still outside the realm of their magic." In attempting to popularize his book and make it more attractive to the general reader, the author has neglected the needs of the serious bird student. Descriptions of many species are not sufficient for identification; juvenile plumages have been omitted, adult descriptions shortened and at times misquoted. Bailey's very helpful range maps were omitted. Nearly all of the black and white and colored illustrations are new; 133 of the 400 species listed are figured in black and white drawings, paintings or photographs and 86 (including many of the same species) in color. The junco-longspur plate would be worthless for identification even if the species were correctly labeled. Most of the colored plates (20 by Kalmbach, other by Rice, Brooks, Weber, Radovich, and Hurd) are attractive, but registration was very poor in the review copy. National Wildlife Refuge checklists are appended, and 20 pages are devoted to 36 bird watching areas. No bibliography.--C. S. Robbins.

Peterson, Roger Tory. A FIELD GUIDE TO THE BIRDS OF TEXAS. Published for the Texas Game and Fish Commission by Houghton Mifflin Company, Boston. xxx + 304 p. Numerous text illustrations + 60 pls. 1960. $3.00. WR 104: 47

Includes "542 spp. of Texas birds, the largest number to be found in any state. The book employs the famous system of identification developed by Roger Tory Peterson which emphasizes the distinguishing characteristics of birds when seen at a distance. Confusingly similar species are clearly differentiated by patternistic drawings in which key field marks are indicated by arrows."

Peterson, Roger Tory. A FIELD GUIDE TO WESTERN BIRDS / FIELD MARKS OF ALL SPECIES FOUND IN NORTH AMERICA WEST OF THE 100TH MERIDIAN, WITH A SECTION ON THE BIRDS OF THE HAWAIIAN ISLANDS. Houghton Mifflin Co. (Boston). 2nd edition, revised and enlarged. xxvi + 366 p., 28 figs. + 60 pls. (36 in color). 1961. $4.95. WR 104: 47

"This new, greatly revised, and enlarged edition of Peterson's 'Western Guide'...is not only a much more complete treatment of western birds than the 1941 edition, but is more profusely illustrated (with the very essential page references by each species figured), treats ranges in much increased detail (including Alaska and western Canada), and adds valuable sections on habitat, nest, and eggs for each species. Almost 600 spp., exclusive of Hawaiian birds, are treated in detail, and notes on 104 accidental or marginal species are added. The 1957 A.O.U. Check-list is followed for scientific and vernacular names, but older, well-established vernacular names are also given. All of the plates are new.... Altogether, one feels that this is much more a new book than a new edition. The most notable addition, and one that will be especially appreciated by an increasing number of observers, is the inclusion of a brief but excellent and well-illustrated treatment of Hawaiian birds.... Another useful addition is a characterizing paragraph on each family and subfamily, and notes on the range, food, and number of species in the world and the West for each family."--From abstr. by Frank Richardson in Auk 78(3), 1961.

Stager, Kenneth E. (Los Angeles County Museum, Los Angeles, Calif.) THE COMPOSITION AND ORIGIN OF THE AVIFAUNA [SYMPOSIUM: THE BIOGEOGRAPHY OF BAJA CALIFORNIA AND ADJACENT SEAS / PART III. TERRESTRIAL AND FRESH-WATER BIOTAS]. Systematic Zool. 9(3/4): 179-183. Sept.- Dec. 1960. WR 104: 47

The mountainous Cape district in the southern and eastern part of the peninsula is rich in endemic species most of which arrived from the north, either from the Pacific coastal region or from northern Mexico. The number of recognizably distinct forms shows that the region has been an effective "center of differentiation." Opposing this idea, the resemblance of most of the endemics of the Cape to closely related species in southwestern U. S. and northern Mexico shows that the birds of the Cape have diverged less from the ancestral stock than representatives of the same species on the Pacific coast.--Mary F. Myers.

Törnroos, Veijo. LINTUFAUNISTISIA TIETOJA POHJOIS-SUOMESTA, ERITYISESTI OULUS SEUDULTA. [AVIFAUNA OF NORTHERN FINLAND.] Ornis Fennica 37(4): 101-117. 1960. [From Biol. Abstr. 36(16), 1961.] WR 104: 48

[In Finnish] with German summary. An annotated list including observations of various ornithologists during 1945-9.--D. E. Davis.

Warham, John. (Melbourne, Australia.) THE BIRDS OF RAINE ISLAND, PANDORA CAY AND MURRAY ISLAND SANDBANK, NORTH QUEENSLAND. Emu 61(2): 77-93, 2 pls. June 1961. WR 104: 48

An annotated list and general notes are presented for the birds of Raine Island. Gannet and booby chicks showed a tendency to return to the nest site after being frightened away. The 3 tropical gannets differ from their southern counterpart in that all feed their young for some time after fledging. The general behavior of the tropical species on their breeding grounds is far less demonstrative than that of the southern species. The volume of display is reduced and many aspects of the elaborate ceremonial of the southern form are only weakly reflected by the tropical species.--Stephen V. Goddard.

BIRDS--POPULATIONS & FLUCTUATIONS

Campbell, Bruce. (Oxford, England.) THE RESEARCH METHODS OF THE BRITISH TRUST FOR ORNITHOLOGY. Proc. Intern. Ornithol. Congr. 12: 144-152, 5 figs. 1958 [1960]. WR 104: 48

Britain has used questionnaires to collect information about birds for nearly 100 years. The various forms used are described and figured. The nest record scheme of the British Trust for Ornithology is considered the most important original technique and has been copied in many other countries.--From summ.

Farrer, B. G. A STARLING INVASION. Hastings E. Sussex Nat. 9: 77-81. 1960. [From J. Anim. Ecol. 30(1), 1961.] WR 104: 48

"Notes on starling behaviour at a roost near Hastings."

Formozov, A. N. (Acad. Sci. USSR, Moscow.) LA PRODUCTION DE GRAINES DANS LES FORÊTS DE CONIFÈRES DE LA TAIGA DE L'U.R.S.S. ET L'ENVAHISSEMENT DE L'EUROPE OCCIDENTALE PAR CERTAINES ESPÈCES D'OISEAUX. [SEED PRODUCTION IN CONIFERAL FORESTS OF THE TAIGA OF USSR AND THE INVASION OF WESTERN EUROPE BY CERTAIN SPECIES OF BIRDS.] Proc. Intern. Ornithol. Congr. 12: 216-229, 9 figs. 1958 [1960]. WR 104: 48

In French. The cross-bills (Loxia curvirostra), the great spotted woodpecker (Dendrocopus major), and the nutcracker (Nucifraga caryocatactes) invade western Europe when there are mast failures in the taigas of the USSR.

Johnston, Richard F. (Univ. Kansas, Lawrence.) POPULATION MOVEMENTS OF BIRDS. Condor 63(5): 386-389. Sept.-Oct. 1961. WR 104: 48

"Dispersal, defined as movement from site of birth to site of breeding, is a mechanism that tends to ensure complete testing or investigation by a species of all suitable habitat within and beyond the area of established distribution of this species." Usually the birds less than one year old disperse. "Spacing, resulting from territorial behavior of adults and responsible for dispersion of breeding units, does not effect, or in any meaningful way affect, dispersal. The capacities for these two types of movement exist independently of one another, in spite of the fact that some dispersal can occur coincident with spacing."--From summ.

Mörzer Bruijns, M. F. DE BRUIKBAARHEID VAN VOGELTELLINGEN UIT TREINEN. [ON THE VALUE OF BIRD CENSUS FROM TRAINS.] Levende Natuur 62(1): 13-21. 1959. [From Biol. Abstr. 36(18), 1961.] WR 104: 48

[In Dutch.] Birds were counted from the train between Utrecht-Zwolle-Leeuwarden (210 KM) and Utrecht-Hilversum (15 KM). The results indicate that this method, applicable for large birds in open country, can yield approximate data on densities of bird populations in different areas and in different seasons.--P. Korringa.

Phillips, J. H. SEX AND AGE COUNTS OF WINTERING THRUSHES. Brit. Birds 54 (7): 277-282. July 1961. WR 104: 49

Mist nets were used to capture blackbirds for an age and sex ratio study in England. Two hundred and one birds were captured at the first station and 459 at the second. Both stations had approximately a 1:1 sex ratio in the adults. Data from the second station on the age of ♀♀ could not be used due to the large number of birds whose age could not be determined exactly. Data from the first station indicated a juvenile sex ratio of 2 ♂♂:1 ♀. Juvenile ♂♂ were found to make up respectively 72.3 and 77.3% of the total ♂ populations captured at the two stations. Juvenile ♀♀ were found to make up 53.9% of the total ♀ population captured at the first station.--Stephen V. Goddard.

Rooth, J. VOGELTELLINGEN OP VLIELAND VAN 1953 T. M. 1956. [BIRD COUNTS 1953-1956 ON THE ISLAND OF VLIELAND (HOLLAND).] Limosa 33(3-4): 134-159, 1 fig. 1960. WR 104: 49

In Dutch with English summary. Data on 175 spp. of birds observed of which 60 were breeding spp. on the island. Vlieland Island is an important halting-place for some hundred thousands of migrating birds.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Bateson, P. P. G., and J. L. Cutbill. NOTES ON BIRDS OBSERVED IN WAHLENBERGFJORD, SPITSBERGEN. Sterna (Stavanger Mus.) 4(4): 141-152, illus. 1960. [From Biol. Abstr. 36(20), 1961.] WR 104: 49

In English with Norwegian summary. In 1958 the northern shores of Spitsbergen were never wholly free of pack-ice and the year was probably colder than usual. The Arctic fox, Alopex lagopus, was seen frequently. Their predation was such that out of an estimated 300 pairs of birds breeding on the islands, only a few pairs of eider, Somateria mollissima and the majority of 50 pairs of snow-buntings (Plectrophenax nivalis) hatched young. It is remarked that this sort of predation cannot be normal. Notes are given for 24 spp.

Davis, David E. (Pa. State Univ., University Park.) PRINCIPLES FOR POPULATION CONTROL BY GAMETOCIDES. Trans. 26th N. A. Wildl. Conf. p. 160-167. 1961. WR 104: 49

Summary: For the reduction of a population, the control of the birth rate shows great promise. Chemicals that may be called gametocides prevent the formation of gametes. Based on the population principles of density dependence and sigmoid growth, it is apparent that a method that does not allow for compensation will be most effective. A chemical, triethylenemelamine (TEM), prevented formation of gametes in starlings and, when used on wild populations of redwings, appeared to reduce productivity. Since the birds maintained their reproductive behavior, no compensation occurred. The use of a gametocide promises to add sensitivity to control measures.

Harrison, J. M., and J. G. Harrison. RADIOACTIVE CONTAMINATION IN BIRDS. 12th Ann. Rept. Wildfowl Trust 1959-1960. p. 151-152. 1961. WR 104: 49

A brief review paper.--Stephen V. Goddard.

Hickey, Joseph, and L. Barrie Hunt. SONGBIRD MORTALITY FOLLOWING ANNUAL PROGRAMS TO CONTROL DUTCH ELM DISEASE. Atlantic Nat. 15(2): 87-92. 1960. [From Biol. Abstr. 36(18), 1961.] WR 104: 49

A table shows a 69-98% robin mortality in 1959 for 6 Wisconsin areas, averaging 26 acres, following three years mistblowing DDT spraying (data includes: elm number per acre; amount DDT per tree, per acre; robin loss per 100 acres, per 100 elms). Breeding censuses of robin pairs in nesting period revealed a 11-12% loss over 5 unsprayed areas, 35% of the sprayed-area robin population on April 26th had disappeared by June 6th. Census methods of Williams ('26) and Kendeigh ('56) are described, since songbird loss through DDT spraying has not been studied in the east except for Benton ('51) and Blagbrough ('52).--E. M. Boyd.

Ridpath, Michael G., Ronald J. P. Thearle, Daniel McCowan, and Frank J. S. Jones. (Ministry Agr., Surrey, England.) EXPERIMENTS ON THE VALUE OF STUPEFYING AND LETHAL SUBSTANCES IN THE CONTROL OF HARMFUL BIRDS. Ann. Appl. Biol. 49(1): 77-101. 1961. [From Biol. Abstr. 36(17), 1961.] WR 104: 50

Laboratory experiments and field trials were carried out with the alpha isomer of chloralose. Comparative tests with pentobarbital sodium, dithiobiuret, tri-ortho-cresyl phosphate, picrotoxin, nicotine, parathion and sodium fluoroacetate showed that with the possible exception of nicotine, none of these substances were as promising as chloralose. The LD_{50} of α-chloralose to feral pigeons (Columba livia var.) was found to be 131 mg/kg. In comparing 4 methods of administering chloralose to pigeons, treated grain and flour pills were more effective than gelatine capsules either with or without grain; flour pills were most satisfactory for laboratory trials. Field trials using chloralose on grain baits had only limited success against Corvidae and wood pigeons (Columba palumbus) in rural areas, but urban populations of feral pigeons were reduced by 48 to 83% in 3 to 7 treatments. Using concentrations between 0.5 and 2.5% by weight in bait, 1544 feral pigeons were caught in 52 trials in towns and the lower concentrations produced lower mortality without affecting the size of the catch. Bait containing 1.5% by weight gave the greatest efficiency with a mortality of less than 50%. Two trials using chloralose against house sparrows (Passer domesticus) failed, but 80 house sparrows were caught incidentally during 4 pigeon trials. In towns the risk of accidentally catching legally protected birds is negligible, but in rural districts it is higher. It is concluded that the use of α-chloralose probably offers a better means of controlling feral pigeons in towns than any existing method.--R. J. P. Thearle.

Ringleben, H. VERWILDERT HAUSTAUBEN IN HYGIENISCHER SICHT. [THE PIGEON NUISANCE IN CITIES.] Desinfektion u. Gesundheitswesen 52: 124-128, 4 figs. Sept. 1960. [From Public Health Eng. Abstr. 41(9), 1961, from Bull. Hyg. 36, May 1961.] WR 104: 50

[In German.] Pigeons have increased in many German cities. This is correlated with the wartime bombings which have produced many suitable nesting places and with the fact that city-dwellers are eager to feed the birds. Information is given on the pigeon populations in different cities (in Hamburg there are from 15,000 to 20,000 pigeons). The average annual weight of excreta per bird is 2.25 to 2.75 kg. The nuisance and hygienic dangers of large numbers of pigeons in urban areas are stressed.

Royall, Willis C., Jr., and Johnson A. Neff. (Box 1006, Mesa, Ariz.) BIRD REPELLENTS FOR PINE SEEDS IN THE MID-SOUTHERN STATES. Trans. 26th N. A. Wildl. Conf. p. 234-238. 1961. WR 104: 50

For many years efforts at direct seeding of the southern pines were futile, the planting season occurring between Nov. and March when populations of seed-eating birds were at their maximum. This paper offers a chronology of the part played by the Denver Wildlife Research Center, Bureau of Sport Fisheries and Wildlife, in the cooperative program of development of effective bird repellent treatments for pine seeds. The over-all period covered is from 1947 through 1960. Today the use of bird repellents for direct-seeded southern pine plantings is an accepted field practise that has been termed one of the greatest achievements in the past 150 years of forestry.--Johnson A. Neff.

BIRDS--PARASITES AND DISEASES

Bennett, Gordon F. (Ontario Res. Foundation, Toronto, Ontario.) ON THREE SPECIES OF HIPPOBOSCIDAE (DIPTERA) ON BIRDS IN ONTARIO. Canadian J. Zool. 39 (4): 379-406, 3 figs. Aug. 1961. WR 104: 50

Ornithomyia fringillina, Ornithoica vicina, and Lynchia americana were collected from 16% of 6448 birds (of 84 spp.) examined in Algonquin Park, Ontario, during July-Sept. of 1957-60. Hippoboscids occurred more commonly and had better survival on immature birds. Sparrows and thrushes harbored fringillina more frequently than other birds; certain birds, such as purple finches, were unsuitable hosts.--From auth. abstr.

Beverley-Burton, Mary [= Mrs. D. F. Mettrick]. (Univ. Coll. Rhodesia, Nyasaland, Salisbury, S. Rhodesia.) STUDIES OF THE TREMATODA OF BRITISH FRESHWATER BIRDS. Proc. Zool. Soc. London 137(1): 13-39, 9 figs. July 1961. WR 104: 51

The literature concerned with the helminthic fauna of Anseriformes is briefly surveyed. A host parasite list is presented which includes 9 new host records, descriptions of 15 species of trematodes which were collected from British waterfowl during 1956-8, and a key for the separation of the genera of the subfamily Notocotylinae.--From auth. abstr.

Clapham, P. A. RECENT OBSERVATIONS ON HELMINTHIASIS IN SOME BRITISH GAME BIRDS. J. Helminthol., R. T. Leiper Suppl. p. 35-40. 1961. [From Vet. Bull. 31(9), 1961.] WR 104: 51

Helminth parasites may be important causes of disease and death to penned and wild gamebirds. Syngamus trachea and Heterakis are the most important, but Trichostrongylus tenuis are potentially important in pheasants. Species of Capillaria and Heterakis which normally cause little trouble among poultry, can cause death and disease among gamebirds.--From abstr.

Hibler, Charles P. (Dept. Zool., Colo. State Univ., Fort Collins.) PRELIMINARY NOTE ON SOME FILARIOIDS OF THE AMERICAN MAGPIE, PICA PICA HUDSONIA (SABINE, 1823) AND THEIR INTERMEDIATE HOSTS IN NORTHERN COLORADO. Wildl. Disease no. 20. 2 p. 23 Oct. 1961. WR 104: 51

[Numbers 17, 18, 19 and 20 on one microcard.] Of 4 species of Filarioids found in magpies, 3 are classified as Splendidofilaria spp. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

Locke, Louis N. (Patuxent Wildl. Res. Center, Laurel, Md.) HERON AND EGRET LOSSES DUE TO VERMINOUS PERITONITIS. Avian Diseases 5(2): 135-138, 1 fig. May 1961. WR 104: 51

Summary: This paper records the second case of fatal verminous peritonitis reported in a great blue heron, and the first in an American egret. Eustrongylides ignotus had not previously been reported from the American egret.

Luft, Krustyna. (Katedra Parazytol. W. S. R., Lublin, Akademicka, Poland.) THE HELMINTHS OF JAY (GARRULUS GLANDARIUS L.) AND MAGPIE (PICA PICA L.) FROM LUBLIN PALATINATE. Acta Parasitol. Polonica 8(21/32): 351-356, illus. 1960. [From Biol. Abstr. 36(19), 1961.] WR 104: 51

Polish summary.

Makarenko, V. F. [CHANGE IN THE HELMINTH FAUNA OF BIRDS IN RELATION TO ECOLOGICAL CONDITIONS.] Papers presented to K. I. Skryabin, Moscow Izdat. Akad. Nauk SSSR: 211-215. 1958. [From Helminthol. Abstr. 30(3), 1961.] WR 104: 51

In Russian. The helminth fauna of birds of the Central Urals was studied in relation to their habitats and feeding habits. The birds most frequently infected with trematodes were the insect-eaters from water-meadows and then those with a mixed grain and insect diet from forests and from water-meadows; cestodes were most frequent in birds with the mixed diet from forests and then in the insect-eating birds from water-meadows. Nematodes reached the highest incidence in birds of prey. In migratory and non-migratory birds the incidence of helminthiasis generally, and that of trematodes and cestodes, was similar but nematodes were more frequent in the latter; there was also a distinct difference in the specific composition of helminths in these two groups of birds.--N. Jones.

Romashov, V. A. [THE EPIZOOTIOLOGY OF OPISTHORCHIS INFECTIONS IN THE VORONEZH PRESERVE.] Papers presented to K. I. Skryabin, Moscow Izdat. Akad. Nauk SSSR: 297-301. 1958. [From Helminthol. Abstr. 30(3), 1961.] WR 104: 51

In Russian.

BIRDS--PARASITES AND DISEASES--Continued

Stoican, E. CONTRIBUTII LA STUDIUL HELMINTOFAUNEI CIORII DE SEMĂNĂTURĂ (CORVUS FRUGILEGUS) DIN R.P.R. [CONTRIBUTIONS TO THE STUDIES OF THE ROOK (CORVUS FRUGILEGUS) IN RUMANIA.] Probleme Parazitol. Vet. Inst. Patologie & Igiena Animala (Bucharest) 8: 67-74, illus. 1960. [From Helminthol. Abstr. 30(2), 1961.] WR 104: 52

In Rumanian with French and Russian summaries. In the 59 rooks examined, the incidence of Eucoleus corvicula was 75.5%; of Microtetrameres sp., 61%; Acuaria sp., 55%; and Capillaria corvorum, 5%. Hymenolepididae were found in 44% of the birds.

Sudmann, E. ORNITOSE-FUGELSJUKE. [ORNITHOSIS--A DISEASE OF BIRDS.] Sterna 4: 68-70. 1960. [From Ibis 103a(2), 1961.] WR 104: 52

"(Swedish with English summary.) A brief review of literature concerning psittacosis (ornithosis)."

GAME BIRDS--GENERAL

Bump, Gardiner, and Wayne H. Bohl. (US F&WS, Washington 25, D. C.) RED JUNGLEFOWL AND KALIJ PHEASANTS. US F&WS, Spec. Sci. Rept.--Wildl. no. 62. vi + 41 p., 14 figs. Sept. 1961. WR 104: 52

Includes information on the distribution, relative abundance, habitat and cover preferences, climatic comparisons, food and water needs, general habits, predation, reproductive capacity, diseases and parasites, and an analysis of competing interests of the red junglefowl (Gallus gallus) and the Kalij pheasants (Lophura leucomelana). These gamebirds are potentially adaptable to the warmer woodlands of the Southeast.

QUAIL

Frye, O. E., Jr. (Fla. Game & Fresh Water Fish Comm., Tallahassee.) A REVIEW OF BOBWHITE QUAIL MANAGEMENT IN EASTERN NORTH AMERICA. Trans. 26th N. A. Wildl. Conf. p. 273-281. 1961. WR 104: 52

Questionnaires were sent in January 1961 to 23 states comprising the major portion of bobwhite range. The questions were designed to determine extent and cost of quail programs, status of habitat, estimate of future quail hunting possibilities, evaluation of management techniques, and ideas as to the most practical approach to improved quail production. Hatchery production of quail by states is declining. Habitat is deteriorating as a result of unfavorable land use practices. Food planting, cover planting, and manipulation of farm pattern are considered the most important current management techniques. Manipulation of farm pattern is considered the best future technique. Clean farming, pasture improvement, and intensive timber production respectively are considered the most important as factors presently limiting quail. Hunting, predation, and disease are relatively unimportant. Habitat manipulation on private lands by private individuals with technical advice from state was almost unanimous choice as the activity most likely to improve quail hunting in the next decade. More than 90% of present quail harvest occurs without management effort according to the replies from most of the states. Half of the states would not venture estimates of cost of doubling quail population. The other states estimated $1.00 to $5.00 per bird. Prescribed burning (in areas where suitable) is considered the most economical management technique. The most popular state approach to increasing quail is wildlife extension work. The compensation of landowners by hunters is considered by many as the only practical approach to improving habitat.--From auth. abstr.

Norton, Horace W., Thomas G. Scott, William R. Hanson, and Willard D. Klimstra. (Univ. Ill., Urbana.) WHISTLING-COCK INDICES AND BOBWHITE POPULATIONS IN AUTUMN. J. Wildl. Mgmt. 25(4): 398-403. Oct. 1961. WR 104: 52

Summary: Data from large and small areas, based on indices and direct counts, on the relationship of summer whistling to autumn populations of bobwhites were evaluated to ascertain whether counts of whistling quail provide a reliable estimate of fall populations. Such estimates have not yet proved to have a substantial statistical basis or to be sufficiently reliable for setting the length of the open season or establishing bag limits.

Wilson, Wilbor O., Ursula K. Abbott, and Hans Abplanalp. (Univ. Calif., Davis.) EVALUATION OF COTURNIX (JAPANESE QUAIL) AS PILOT ANIMAL FOR POULTRY. Poultry Sci. 40(3): 651-657, illus. 1961. [From Biol. Abstr. 36(20), 1961.] WR 104: 53

A study of growth, reproductive performance and artificial incubation of the Japanese quail (Coturnix coturnix japonica) indicated that it may be useful as pilot animal in poultry research. Coturnix proved to have good viability and presented no major difficulties under laboratory conditions.--Hans Abplanalp.

PHEASANTS

Brown, Charles P., and Stacy B. Robeson. THE RING-NECKED PHEASANT IN NEW YORK. N. Y. Dept. Conserv. (Albany). 39 p., illus. 1959. WR 104: 53

A contribution of Federal Aid projects 1-R, 26-R, and 81-R. Pheasants were first introduced into N. Y. in 1733 and were established in all suitable habitat by 1920. They increased steadily until about 1928 and since then have fluctuated. Small game hunters have increased from 288,000 in 1920 to about 552,000 in 1956. Good pheasant range is fertile farmland (corn and grain) and the best N. Y. pheasant range is in the Lake Plains region. The fall harvest is made up of 70% to 90% birds-of-the-year. Only one-fourth of the ♀♀ succeed in rearing a brood each spring. Hay, stubble, and weed fields are preferred nesting habitat. Heaviest nesting losses are caused by farm machinery. Predators--including foxes--rarely have a serious effect on pheasant numbers. Cold, wet spring weather probably is the most serious factor affecting chick production. Cold and snow usually do not have serious effects on pheasants; but prolonged crust or ice glaze can cause trouble. Serious outbreaks of disease among wild pheasants are rare. Experimental hedge row management may provide a practical method to induce ♀♀ to nest out of the way of farm machinery.

Lyon, L. Jack. (Colo. Game & Fish Dept., Box 633, Fort Collins.) EVALUATION OF THE INFLUENCES OF WOODY COVER ON PHEASANT HUNTING SUCCESS. J. Wildl. Mgmt. 25(4): 421-428, 1 fig. Oct. 1961. WR 104: 53

After adjustment for differences in hunting effort and pheasant populations among 23 nine-section study areas, it is shown that more pheasants are killed with less effort where woody plantings are present. In an underharvested population pheasant hunting can be significantly improved by woody cover, and the improvement can be accomplished on an economically sound basis.

MacMullan, R. A. (Mich. Dept. Conserv., Lansing.) RING-NECKED PHEASANT HABITAT MANAGEMENT IN THE UNITED STATES. Trans. 26th N. A. Wildl. Conf. p. 268-272. 1961. WR 104: 53

It is the consensus of pheasant managers that pheasant numbers will remain static or will decrease in North America. Pheasant habitat is gradually deteriorating, principally because of intensification of agriculture. Most important habitat deficiencies are inadequate winter and nesting cover. There are good techniques for improving the habitat for pheasants, but they are expensive. Efforts to improve habitat are most efficient on good farm land, which has higher values because of its use for agricultural purposes. Man has created pheasant habitat inadvertently and pheasants are a by-product of agricultural land. Methods for evaluating increases in pheasants as a result of habitat improvement are weak--and small increases cannot be measured efficiently. Nevertheless, there is no evidence that habitat improvement programs have made much progress thus far toward substantial increases. A habitat development program should emphasize the following: (1) high quality projects (even though they have a higher intrinsic cost), (2) advisory services to land managers, (3) research on habitat requirements, techniques, and methods for evaluating game produced by habitat improvement.--From auth. abstr.

GROUSE, PARTRIDGE, ETC.

Gullion, Gordon W. (Forest Res. Center, Univ. Minn., Cloquet.) A TECHNIQUE FOR WINTER TRAPPING OF RUFFED GROUSE. J. Wildl. Mgmt. 25(4): 428-430. Oct. 1961. WR 104: 54

Summary: The use of corn, dyed orange, red, blue, or purple as bait in "lily-pad" (shorebird) traps at sites prepared before snowfall, has proven a highly successful winter trapping technique for ruffed grouse at the Cloquet Forest Research Center, Minnesota. Techniques of dyeing and swelling shelled corn, as well as trapping methods, are described.

Hamerstrom, Frederick, and Frances Hamerstrom. (Wis. Conserv. Dept., Plainfield.) STATUS AND PROBLEMS OF NORTH AMERICAN GROUSE. Wilson Bull. 73(3): 284-294. Sept. 1961. WR 104: 54

A contribution from the Wilson Ornithological Society Conservation Committee largely based on material not yet published. The treatment is by species and there are contributions by 42 wildlifers in the U. S. and Canada. "The tetronids as a group illustrate remarkably well a fundamental ecological principle: that the welfare of any species is basically determined by the condition of its habitat. Modern man is now one of the major forces, often the most important, in shaping habitats. Ultimately, the preservation or destruction of many species is in our hands."

I.C.I. Game Services. PARTRIDGE REARING / WINTERING PENNED STOCK, MATING IN CAPTIVITY AND EGG PRODUCTION. I.C.I. Game Res. Sta. (Fordingbridge, Hampshire, England), Advisory Booklet no. 4. 45 p., illus. 1952, revised Spring 1961. WR 104: 54

This booklet has been expanded and re-written since the 1957 revision. Discussion includes: coop and broody methods, movable pens, rearing in artificial brooders, feeding, releasing hand-reared broods, wintering partridges for breeding stock, mating hand-reared partridges, egg production, and lists of bantam breeders and equipment dealers.

Rykovskii, A. S. [THE HELMINTHS OF THE GROUSE AND THEIR ROLE IN DECREASING THE NUMBERS OF THE HOST.] Zool. Zhur. 39(11): 1607-1611. 1960. [From Biol. Abstr. 36(21), 1961, from Referat. Zhur., Biol., 1961, no. 8E53.] WR 104: 54

Translation [from Russian]. Original with English summary. In 1957 and 1958, grouse ranging in age from a few days to 3 months were examined in the Pereslavl' State Forest and Game Preserve. The most extensive and severe infections were by cestodes. The most important of these were Raillietina urogalli. Ten to 15 day-old nestlings were all infected by this parasite. Ants of the subfamily Myrmicinae play a special role in the nutrition of the grouse. The author suggests that they are the intermediate host for R. urogalli. Selective poisoning of the ant hills with insecticides is suggested for control.

TURKEY

Lewis, John B. (Mo. Conserv. Comm., Columbia.) WILD TURKEYS IN MISSOURI, 1940-1960. Trans. 26th N. A. Wildl. Conf. p. 505-513. 1961. WR 104: 54

Missouri's first wild turkey season for 23 years was held during April 1960. This open season, for gobblers only, climaxed a 20-year program of research and management. Although two attempts to establish game-farm birds failed, it appears that turkeys can be restored to much of their former range in Missouri by trapping, transporting, and releasing native birds. Intensive management on refuge areas has produced adequate numbers of wild birds to permit trapping. This fact, plus renewed public interest, plus use of the highly successful cannon net for trapping, are all responsible for the indicated success of the program. In one county it was possible to open the hunting season only four years after the initial releases were made.--Auth. abstr.

MacDonald, Duncan. (N. Mex. Dept. Game & Fish, Albuquerque.) HUNTING SEASON WEIGHTS OF NEW MEXICO WILD TURKEYS. J. Wildl. Mgmt. 25(4): 442-444. Oct. 1961. WR 104: 55

Summary: Weights of 106 Merriam's turkeys killed in September and November 1960 in New Mexico are compared with weights of 414 turkeys killed earlier in New Mexico, and with weights of 149 Merriam's turkeys from Arizona. A conversion factor (13 percent) for equating weights of eviscerated turkeys was calculated.

Williams, Lovett E., Jr. (U. S. Coast Guard Cutter Gentian, General Delivery, Galveston, Texas.) NOTES ON WING MOLT IN THE YEARLING WILD TURKEY. J. Wildl. Mgmt. 25(4): 439-440, 1 fig. Oct. 1961. WR 104: 55

A noticeable difference exists between juvenile and adult turkeys in the appearance of their greater upper secondary coverts. Juvenile coverts are shorter, browner, and less glossy distally than those of adults. Other differences are noted.

DOVES AND PIGEONS

Couch, Andrew B., Jr. (Southern Methodist Univ., Dallas, Texas.) POWDER, SHOT AND THE GREY GHOST. Texas Game & Fish 19(9): 10-11, 1 fig. Sept. 1961. WR 104: 55

A discussion of types of shot-shells for hunting mourning doves. The loss of mourning doves due to infection resulting from wounds and lead poisoning is not as great as originally believed. Mourning doves can therefore be shot at longer ranges effectively without producing a greater number of wasted birds.

Couch, Andrew B., Jr., B. Grabstald, and Kenneth J. Kimbrough. (Southern Methodist Univ., Dallas, Texas.) COLLECTING LOUSEFLIES FROM MOURNING DOVES. J. Wildl. Mgmt. 25(4): 440-442. Oct. 1961. WR 104: 55

Frankel, Arthur I., and Thomas S. Baskett. (Mo. Coop. Wildl. Res. Unit, Columbia.) THE EFFECT OF PAIRING ON COOING OF PENNED MOURNING DOVES. J. Wildl. Mgmt. 25(4): 372-384, 5 figs. Oct. 1961. WR 104: 55

Results of this study of penned mourning doves indicate that the major influence upon the cooing frequency of a male dove is whether or not it is mated. Tenfold increases in frequency of perch coos resulted when females were removed from their mates. When the females were returned, cooing dropped to the previous levels, if pair bonds were restored. No generalizations could be drawn about the effects on cooing of weather factors or position in the nesting cycle. If our results can be extended to the field, then any precise interpretation of call-count data requires information on the ratio of mated to unmated male doves.--From summ.

Gallizioli, Steve. (Ariz. Game & Fish Dept., Phoenix.) THE CURRENT STATUS AND MANAGEMENT OF THE MOURNING DOVE IN THE WESTERN MANAGEMENT UNIT. Trans. 26th N. A. Wildl. Conf. p. 395-405, 1 fig. 1961. WR 104: 55

Calif. and Ariz. bag 75% of the western management unit's total dove kill. Hunter interest (measured by per cent of hunters who shoot doves) varies from a low of 6% in Oreg. to a high of 40% in Ariz. According to call counts since 1953, the unit's dove population has been relatively stable. Some states question the validity of call counts as now conducted. Six of the seven states (including Calif. and Ariz.) do not feel hunting is an important source of dove mortality. Land use practices of recent years are believed to have been largely beneficial to the species. Arguments in favor of more liberal hunting regulations are presented.--Auth. abstr.

Kiel, William H., Jr. (Patuxent Wildl. Res. Center, Laurel, Md.) THE MOURNING DOVE PROGRAM FOR THE FUTURE. Trans. 26th N. A. Wildl. Conf. p. 418-422. 1961. WR 104: 56

A national research and management program for mourning doves was outlined by the Mourning Dove Technical Committee, which was appointed by the Dove Committee of the International Association of Game, Fish and Conservation Commissioners in 1960. This program has been approved by the International Association and the Bureau of Sport Fisheries and Wildlife. It is presented in the appendix of this paper. Research needs of highest priority are: (1) To improve techniques for measuring the density and distribution of mourning doves; (2) to determine the relationship of production and harvest areas, and to increase knowledge of the migratory movements and mortality of mourning doves; (3) to evaluate the effect of hunting mortality on the size of the population and the effect of hunting regulations on the kill. Implementing the program will require close cooperation of Federal, State, institutional and private agencies. Progress of the National Dove Program will be discussed annually at the dove regulations meeting in Washington, D. C.--Auth. abstr.

Legler, Eugene, Jr., Herbert Stern, Jr., and W. Scott Overton. (Tenn. Game & Fish Comm., Nashville.) A PRELIMINARY EVALUATION OF TELEPHONE AND FIELD SAMPLING FRAMES. Trans. 26th N. A. Wildl. Conf. p. 405-417. 1961. WR 104: 56

A cooperative study was made by the Tenn. and La. Game Commissions and the N. C. Institute of Statistics to investigate telephone and field sampling frames as a combined technique for estimating dove hunting pressure and harvest. The study was limited to Wilson County, Tenn. and Acadia Parish, La. during 1960 dove season. Response rates of approximately 88% can be expected from telephone frame. This frame appears to be practical, inexpensive, and has a distinct advantage over conventional frames in that the survey may be conducted immediately after the season. Results of field sampling frame were less encouraging. This phase of study was discontinued on both study areas after first part of split dove season. Statistical analysis of data collected is to be completed at a later date by the Institute. Recommendations were made to continue testing both frames during the 1961 season.--Eugene Legler, Jr.

Locke, Louis N., and Carlton M. Herman. (Patuxent Wildl. Res. Center, Laurel, Md.) TRICHOMONAD INFECTION IN MOURNING DOVES, ZENAIDURA MACROURA, IN MARYLAND. Chesapeake Sci. 2(1-2): 45-48. Mar.-June 1961. WR 104: 56

During the period 1950-60, the incidence of Trichomonas gallinae shown in several surveys of doves trapped or shot in Maryland varied from zero to 12.5%. Of 44 clinically ill doves examined during this period, 25 were infected with T. gallinae. The incidence of trichomonad infection among Maryland mourning doves appears to be low. When it does occur, it is usually caused by highly virulent strains which produce fatal infections.--From auth. concl.

Murton, R. K. (Min. Agr., Fisheries & Food, Tangley Place, Worplesdon, Surrey, England.) THE EFFECT ON WOOD-PIGEON BREEDING OF SYSTEMATIC NEST DESTRUCTION. Ann. Appl. Biol. 48(1): 95-106, 1 fig. Mar. 1960. WR 104: 56

With systematic nest destruction conducted during 2 periods, an estimated 63% of the young were prevented from being fledged. "If three operations had been conducted instead of two, considerably more young could have been prevented from leaving their nests and an estimated 80% success could have been achieved" and the cost of killing potential adults would have been the same as for two periods. "Nest destruction would seem to be a little more expensive than shooting at about one man's wages per hour per potential adult. But organized nest destruction appears to be far more efficient than shooting and can be practised by relatively less skilled operators."

Peters, Harold S. (968 Cumberland Rd., NE, Atlanta 6, Ga.) THE PAST STATUS AND MANAGEMENT OF THE MOURNING DOVE. Trans. 26th N. A. Wildl. Conf. p. 371-374. 1961. WR 104: 56

The mourning dove nests in 48 of the 50 states, and has the longest breeding season of any North American bird. It shows peculiar adaptability to man-made habitat. It is a game species in 30 states, more doves are harvested by hunters than any other game species. The kill is increasing and may now approach 30 million annually. In spite of this harvest the dove presently is maintaining

an all-time high population and is not endangered in any part of its range. Mourning doves have been taken for granted so that few investigations were made in early years, none until the early 1920s. Ten Southeastern States conducted a Cooperative Dove Study from 1948 to 1952--the most extensive investigation of any single bird species. This serves as a foundation upon which to build a realistic mourning dove program.--From auth. abstr.

Russell, Dan M. (707 Josephine Ave., Bowling Green, Ky.) PRESENT STATUS AND MANAGEMENT OF THE MOURNING DOVE IN THE EASTERN MANAGEMENT UNIT. Trans. 26th N. A. Wildl. Conf. p. 375-385. 1961. WR 104: 57

A review of the current status and management of mourning doves in the 27 states east of the Mississippi River and Louisiana. Information was obtained by questionnaire, personal communication and publications (the latter primarily from the Southeastern Technical Dove Committee and affiliates). Subjects treated are population trends, mortality, management practices, regulations, current studies, and results. Some factors discussed are: The steady population increase since 1953, prospects for a population decline, need for identification and isolation of population segments within the broad boundaries of the management units relating production areas to harvest areas, and need for organizing and concentrating efforts in future work.--From auth. abstr.

Wight, Howard M. (Patuxent Wildl. Res. Center, Laurel, Md.) THE STATUS OF THE MOURNING DOVE IN THE CENTRAL MANAGEMENT UNIT. Trans. 26th N. A. Wildl. Conf. p. 386-394. 1961. WR 104: 57

A status report of mourning dove population levels, current research, and effort expended in research and management in the Central Management Unit. Recent research on the effect of matedness on cooing of males, homing to breeding areas, and composition of wintering flocks is reviewed. Some problems remaining include development of an adequate measurement of the kill, additional banding, and a review of the baiting regulation as it affects management efforts. Effort expended on dove research and management in the Central Management Unit is well below the national average.--Auth. abstr.

WATERFOWL

Bellrose, Frank C., Thomas G. Scott, Arthur S. Hawkins, and Jessop B. Low. (Ill. Nat. Hist. Surv., Urbana.) SEX RATIOS AND AGE RATIOS IN NORTH AMERICAN DUCKS. Ill. Nat. Hist. Surv. Bull. 27(6): vi + p. 391-474, 23 figs. Aug. 1961. $1.00. WR 104: 57

This paper summarizes and discusses a large volume of sex and age ratio data obtained from ducks in North America between 1939 and 1959. The age and sex composition of populations was measured by samples secured in a variety of ways; for example, birds that were shot by hunters, disease victims, birds trapped for banding, and sight observations. It was found that biases were present in all sources of samples and the measuring of age and sex ratios in waterfowl posed a difficult problem. Each method of measuring age and sex ratios was discussed, and for the more promising methods a procedure presented for evaluating the bias present through the use of banding data. Age ratios based on birds and hunters' bags corrected for the greater vulnerability of immature ducks to shooting showed great promise as a measure of productivity. Differences in productivity were found for different species, areas, and years. The important management implications of age ratio data are discussed. This report is a thoughtful and thorough treatment of a difficult and complex subject. It will be of great interest not only to those concerned with waterfowl but also the general subject of population dynamics.--A. D. Geis.

Boyd, Hugh. THE NUMBER OF BARNACLE GEESE IN EUROPE IN 1959-1960. 12th Ann. Rept. Wildfowl Trust 1959-1960. p. 116-124, 2 figs. 1961. WR 104: 57

A census in the winter of 1959-60 resulted in an estimate of about 30,000 for the world population of Branta leucopsis. In Dec. 1959 there were about 11,100 in the Netherlands, 8600 in Germany, 7100 in Scotland, and 2800 in Eire. Evidence from banding and from observations on the proportions of first-winter birds in different flocks suggests that the geese in the Netherlands and Germany are those breeding in Novaya Zemlya and Zaigach Island, off the Siberian coast. Scottish birds include some from Greenland. The stocks from Siberia and

Spitzbergen have apparently recovered in recent years from the dangerously low levels they reached in 1945-50, although aerial surveys in Sweden show that numbers stopping there in spring have decreased greatly in the last few years. --From auth. summ.

Boyd, Hugh, and Peter Scott, editors. THE TWELFTH ANNUAL REPORT OF THE WILDFOWL TRUST 1959-1960. Printed for Wildfowl Trust (Slimbridge, Gloucestershire, England) by F. Bailey & Son, Ltd., Dursley, Gloucestershire, England. 185 p., illus. + 24 pls. 1961. Price 17 shillings and sixpence. WR 104: 58

In addition to routine reports of investigations conducted on the Trust's grounds, there are diversified reports of other research. Some are entered in this issue of WR under the author's name. Other articles included are: National Wildfowl Refuges; The Wildfowlers' Association Conservation Programme, J. W. Anderton; The importance to wildfowl of the reservoirs in England and Wales, G. L. Atkinson-Willes; Emsland without wildfowl, G. L. Atkinson-Willes; The tracheal anatomy of the Anatidae and its taxonomic significance, Paul A. Johnsgard; The brent goose and its food supply in Essex, P. J. K. Burton; Brent goose age-group counts, 1959-60, P. J. K. Burton; The distribution of mallard ringed in south England, H. Boyd and M. A. Ogilvie; Orientation experiments with mallard, G. V. T. Matthews; The flightless period of the mallard in England, H. Boyd; Reported casualties to ringed ducks in the spring and summer, H. Boyd; Voice recordings of the Anatidae, Jeffery Boswall; Small Canada geese in the British Isles, H. Boyd.

Bruun, B. [DISTRIBUTION OF THE MUTE SWAN (CYGNUS OLOR (GM.)) AT THE COAST AND IN THE INTERIOR OF DENMARK 1935-1959.] Dansk Ornithol. Foren. Tidsskr. 54: 77-84. 1960. [From Ibis 103a(2), 1961.] WR 104: 58

Danish with English summary. The population of mute swans in Denmark has been increasing since protection was introduced in 1926. In 1949, some swans started nesting in the fjords and on the coast, and from 1953 an increasing number of these nests were built of wrack instead of the usual reed construction. The figures suggest a real change of the habits of the mute swan in recent years. --M.J.A.

Burton, A. N., R. Connell, J. G. Rempel, and J. B. Gollop. STUDIES ON WESTERN EQUINE ENCEPHALITIS ASSOCIATED WITH WILD DUCKS IN SASKATCHEWAN. Canadian J. Microbiol. 7: 295-302. 1961. [From Vet. Bull. 31(10), 1961.] WR 104: 58

"Antibodies neutralizing the virus were found in the blood of several species of wild duck in Saskatchewan. The virus was recovered from the blood and organs of wild ducks infected experimentally by the oral route."--M.G.G.

Chura, Nicholas J. (Utah Wildl. Res. Unit, Logan.) FOOD AVAILABILITY AND PREFERENCES OF JUVENILE MALLARDS. Trans. 26th N. A. Wildl. Conf. p. 121-134, 5 figs. 1961. WR 104: 58

Out of 74 potential invertebrate foods and a smaller variety of plants sampled on the Bear River Refuge, 45 different items appeared in the gullet-gizzard contents of 94 juvenile mallards collected in 1959 and 1960. Of these items, 13 occurred as 1%, or more, of the total diet. One- to six-day-old mallards consumed animal foods, mainly terrestrial types, almost exclusively. Proportionately fewer invertebrates and increasingly more plant foods, primarily seeds, were taken as the birds matured. From the 19th to the 25th day, half the diet was plant matter and the rest consisted primarily of aquatic insects. The change to a plant food diet was completed in 46- to 55-day-old mallards before flight occurred. The accessibility of specific food items was regulated by the season of the year, weather, water levels, habitat, previous season's seed crop and conspicuousness of the item. Food utilization varied with the age requirements and related behavior of the maturing duckling. The amount of food consumed varied with the time of day.--From auth. abstr.

Cornwell, George, A. B. Cowan, and G. S. Hunt. (Univ. Mich., Ann Arbor.) SUPERPARASITISM AS A SUSPECTED FACTOR IN WINTER WATERFOWL MORTALITY ON THE LOWER DETROIT RIVER. Wildl. Disease no. 16. 3 p. 23 Oct. 1961. WR 104: 59

[Numbers 13, 14, 15 and 16 on one microcard.] Necropsies of canvasback and scaup ducks found sick and dead along the Detroit River disclosed that many of them were very heavily parasitized by trematodes and cestodes. Preliminary studies of "healthy" ducks of the same species indicate that they differ widely from the sick and dead specimens with respect to numbers of parasites present. Parasitism in the moribund sample is so great that it is called "superparasitism," and it is considered to play an important role in causing the death of the ducks. [Presented at the Mid-West Fish and Wildlife Conference, Toronto, 5-7 Dec. 1960.]--From abstr.

Craighead, John J.; and Dwight S. Stockstad. (F&WS, Missoula, Mont.) EVALUATING THE USE OF AERIAL NESTING PLATFORMS BY CANADA GEESE. J. Wildl. Mgmt. 25(4): 363-372, 2 figs. Oct. 1961. WR 104: 59

During a 5-yr. period 73 aerial platforms, on an average, were available each year to Canada geese. One hundred and seven aerial nests of all types were observed; 49 of these were located in the aerial platforms and 58 in natural elevated sites. Since there was no decrease in the use of natural aerial structures during this time but a decrease in ground nests did occur, it was concluded that the platforms caused a greater number of geese to select aerial sites. Platforms caused significantly measurable effects in nest-site selection, mortality factors, and hatching success. Use of platforms caused a decrease in island ground nests and an increase in island aerial nests. Geese using aerial platforms showed a slight increase in reproductive rate, significantly better hatching success, and a higher percentage of nests successful. The platforms significantly increased desertion as a cause of nest failure, but significantly reduced predation. It is concluded that construction of aerial platforms benefited the geese, but to be most effective, platforms should be rehabilitated annually, erected 20 to 50 ft. above the ground, and located in situations remote from human activities.--From auth. summ.

Downes, M. C., and Ina Watson. AUSTRALIAN WATERFOWL. Fisheries & Wild Life Dept. (Victoria) and Imperial Chem. Industries of Australia & New Zealand, Ltd. 48 p., illus. 1960. WR 104: 59

A field identification guide for 19 spp. of Australian ducks and geese. Two pages are devoted to each species. On one there is a full color reproduction of a painting of the bird in flight, swimming or standing, and a silhouette of the bird compared with one of the black duck. On the opposite page the field identification markings of the bird in flight and swimming or standing are featured. The illustrations are good--a fortunate blending of Shortt and Peterson techniques.

Eltringham, S. K., and G. L. Atkinson-Willes. RECENT POPULATION CHANGES IN BRITISH DUCKS. 12th Ann. Rept. Wildfowl Trust 1959-1960. p. 40-57, 7 figs. 1961. WR 104: 59

A method is described for obtaining indices to represent the relative abundance of ducks in the same month of different years and in each season as a whole. The tufted duck has shown an annual average increase of about 8.5% and doubled its winter population within the 12-year study period. The increase in pochard wintering in this country is equivalent to an annual rise of nearly 5%. This increase took place during 1951-4, and there has been no significant change since. Mallards increased steadily at an annual rate of about 2.5%, but no significant trends were noted for widgeons and teals.--From auth. summ.

Fay, Francis H. (HEW, Anchorage, Alaska.) THE DISTRIBUTION OF WATERFOWL TO ST. LAWRENCE ISLAND, ALASKA. 12th Ann. Rept. Wildfowl Trust 1959-1960. p. 70-80, 1 fig. 1961. WR 104: 59

Twenty-two species of waterfowl are represented on St. Lawrence Island. Twelve of these breed on the island and the others occur irregularly or as migrants. The surrounding waters constitute a major wintering area. In the summer the island is an important breeding and molting area. Seasonal occurrence and some features of natural history of the more common species have been described. The avifauna of St. Lawrence Island is more closely affiliated with that of North America than Asia. A decrease in North American forms is indicated by a comparison of the Eskimo's waterfowl harvest of one to two thousand years ago with those of the present.--From auth. summ.

Fiala, Vladimir. ZMĚNY POČETNÍHO STAVU POTÁPEK (PODICIPIDAE) NA NÁMĚŠTSKÝCH RYBNÍCÍCH V OBDOBÍ 1885-1960. [THE CHANGE IN POPULATION OF GREBES IN THE PONDS OF NUMEST' N. OSL. IN THE YEARS 1885-1960.] Zool. Listy 24(2): 127-134, illus., Maps. 1961. [From Biol. Abstr. 36(19), 1961.] WR 104: 60
[In Czech] with German summary.

Frith, H. J. (Wildl. Surv. Sec., C.S.I.R.O., Canberra.) ECOLOGY OF WILD DUCKS IN INLAND AUSTRALIA. 12th Ann. Rept. Wildfowl Trust 1959-1960. p. 81-91. 1961. WR 104: 60
In inland Australia, waterfowl habitats fluctuate greatly in extent from year to year. Small areas of permanent habitats occur but the most extensive ones are those that are formed periodically and erratically by flooding of the rivers. The movement patterns of the various species that inhabit the region vary according to the habitat occupied by the species and vary in regularity according to their permanence. Species that are confined to the permanent swamps are very regular in movement, but those which utilize the more temporary habitat have developed nomadic habits to a very high degree. The degree of mobility of the different species is related to their food requirements. Some nomadic species have very adaptable food habits and can utilize a very wide variety of foods. The species characteristic of permanent swamps have very regular breeding seasons but the nomadic species are able to breed at any time of the year whenever suitable conditions occur. The sexual cycle culminating in breeding is initiated by the increasing water level in rivers. With increased water levels, breeding is initiated in the prey species thus producing food for the ducklings.--From auth. summ.

Hammond, Merrill C. (Lower Souris Refuge, Upham, N. Dak.) WATERFOWL FEEDING STATIONS FOR CONTROLLING CROP LOSSES. Trans. 26th N. A. Wildl. Conf. p. 67-79, 2 figs. 1961. WR 104: 60
Waterfowl damage to small grain crops is a serious management problem in several areas in the United States and Canada. A specialized feeding technique developed at the Lower Souris National Wildlife Refuge, shoreline feeding stations, combined with ground and aerial patrol, effectively reduced losses to a low level. Details of feeding station operation are described under the following sections: site selection, site preparation, feeding, grain consumption rates, populations, limitations, and publicity. Costs averaged $6.00 per 1000 ducks fed per day (including grain value); nearly $17,000 per season (about $4,000 with value of the share-cropped grain excluded). Potential damage without feeding amounts to an estimated average of roughly $100,000 annually. Feeding stations apparently encouraged use of natural foods, reduced field-feeding tendencies, and they did not modify normal migration patterns to any important degree.--Auth. abstr.

Humphrey, Philip S., and George A. Clark, Jr. PTERYLOSIS OF THE MALLARD DUCK. Condor 63(5): 365-385, 8 figs. Sept.-Oct. 1961. WR 104: 60
The pterylosis of Anas platyrhynchos is described based on the examinations of fresh and preserved, clipped and unclipped specimens, and on soft-ray X-rays of the feather tracts of the trunk.--From summ.

Johnsgard, Paul A. (Univ. Nebr., Lincoln.) BREEDING BIOLOGY OF THE MAGPIE GOOSE. 12th Ann. Rept. Wildfowl Trust. p. 92-103. 1961. WR 104: 60
Discussions are presented on the breeding behavior of a pair of magpie geese which were observed for one breeding season and part of another. Included are discussions on the following: nest-building, copulation, egg-laying and incubation, nest defence, hatching and downy plumage of the young, care and feeding of the young, and plumage changes and development of the young.--Stephen V. Goddard.

Johnsgard, Paul A. (Univ. Nebr., Lincoln.) WINTERING DISTRIBUTION CHANGES IN MALLARDS AND BLACK DUCKS. Am. Midland Nat. 66(2): 477-484. Oct. 1961. WR 104: 61

Abstract: Through the use of data compiled by the Audubon Society's annual Christmas Counts, an attempt has been made to trace the distributional changes of wintering mallards and black ducks in the eastern states from 1900 to the present. During this period the black duck has increased relative to the mallard in few if any states (the Great Lakes region), whereas the mallard has increased nearly everywhere else (except in the extreme northeast), particularly in the southern coastal states. Deforestation and changes in land use are suggested as probable reasons for this trend, which is not likely to be reversed.

Johnson, Oscar W. (Wash. State Univ., Pullman.) REPRODUCTIVE CYCLE OF THE MALLARD DUCK. Condor 63(5): 351-364, 3 figs. Sept.-Oct. 1961. WR 104: 61

Kaczynski, Charles F., and Aelred D. Geis. (Patuxent Wildl. Res. Center, Laurel, Md.) WOOD DUCK BANDING PROGRAM / PROGRESS REPORT, 1959 AND 1960. US F&WS, Spec. Sci. Rept.--Wildl. no. 59. iii + 41 p. Sept. 1961. WR 104: 61

In 1960, cooperators in the United States and Canada banded 10,563 wood ducks, a 49% increase over the number banded in 1959. Uses and limitations of the data are discussed. Pre-hunting season banding provided the most data, but banded samples were too small and too poorly distributed to provide reliable information on population characteristics. The geographical distribution of recoveries from ducks banded in 1959-60 is reported. The data are examined for changes in recovery rates between years, for regional differences in recovery rates associated with the opening dates of the hunting season, and for differences in recovery rates between age groups. The possible uses of the data are discussed.--From auth. abstr.

Keith, Lloyd B. (Univ. Wis., Madison.) A STUDY OF WATERFOWL ECOLOGY ON SMALL IMPOUNDMENTS IN SOUTHEASTERN ALBERTA. Wildl. Monographs no. 6. 88 p., 28 figs. Oct. 1961. WR 104: 61

Includes information on waterfowl ecology and populations derived from studies conducted during 5 breeding seasons (1953-7) on a series of 5 distinct kinds of impoundments. Vegetation and soils of the study area are discussed. Food habits, breeding population, nesting, brood populations and productivity, and management of the waterfowl of the area are also discussed. Management suggestions include: water-level manipulation, reduction of skunk predation by poisoning and trapping of these predators or by the construction of small nesting islands, and elimination of extensive mudflats. "Impoundments created for breeding waterfowl should not be deep enough to support a game-fish population. A combination of grazing and herbicide treatment would likely eradicate dense cattail shorelines on fenced potholes, and increase their use by waterfowl. A mosaic of different sizes of impoundments was thought to constitute the most desirable kind of project."--From auth. summ.

Lindmeier, John P., and Robert L. Jessen. (Minn. Div. Game & Fish, St. Paul.) RESULTS OF CAPTURING WATERFOWL IN MINNESOTA BY SPOTLIGHTING. J. Wildl. Mgmt. 25(4): 430-431. Oct. 1961. WR 104: 61

Spotlighting has been used for capture of flightless young ducks during 3 years as a supplement to drive-trapping. Success which was best on calm, warm, overcast nights, averaged 1.3 ducks per man-hour. (Total for 473 man-hours was 639 ducks.) This is slightly better than the average number of ducks taken by a 3- or 4-man drive-trapping crew. The spotlighting method of capturing waterfowl is a good technique which can be used concurrently with drive-trapping, especially on larger areas where drive-trapping is difficult.

McCabe, Robert A., and Nan Mulder. (Univ. Wis., Madison.) A HISTORY OF THE DELTA DECOY. Trans. 26th N. A. Wildl. Conf. p. 80-98, 5 figs. 1961. WR 104: 62

A decoy is an old European trapping device that catches ducks by luring (tolling with a dog) them from a pond into a net-covered ditch with a closed end. Details of the operation are described. In 10 years' operation at the Delta Waterfowl Research Station, 21,211 ducks of 14 spp. were caught. All birds were aged, sexed, banded, and released. Mallards, blue-winged teal, and redheads were the most abundant species caught. Mallards captured in the decoy were compared as to sex and age with mallards taken in bait traps near Delta, and with some taken in the Prairie Provinces. The sex ratios were not significantly different between the two kinds of trapping in the catch for the years examined. The age ratios showed variation among the years. The same general results were obtained when the Delta decoy catch of mallards was compared with the mallard catch in certain Dutch decoys and also when the catch of mallards, blue-winged teal, redheads and pintail from the Delta decoy was compared with the catch of the same species in bait traps operated in the Delta area. The decoy can be used instead of bait traps in waterfowl research if a proper site is available and a trained decoyman can be employed.--From auth. summ.

McKinley, Daniel. (Lake Erie Coll., Painesville, Ohio.) HISTORY OF CANADA GOOSE AS A BREEDING BIRD IN MISSOURI. Bluebird 28(3): 6-12. Fall 1961. WR 104: 62

The Canada goose ceased to be a breeding bird for Missouri early in the twentieth century.

Mendall, Howard L., and Roland H. Cobb. (Maine Coop. Wildl. Res. Unit, Orono.) WATERFOWL HARVEST STUDIES IN MAINE (1948-1957). Maine Dept. Inland Fisheries & Game, Game Div. Bull. no. 7. xii + 60 p., illus. Aug. 1961. WR 104: 62

Based on field bag checks and postal kill surveys made during ten-year study. Statewide hunter success average was 2.1 ducks per man day of effort. Annual retrieved kill averaged 70,000 ducks with a crippling loss about 25% of the retrieved kill. Average total kill (including cripples) was 87,000 waterfowl annually with a pressure of 12,500 hunters. Almost 50% of the kill was black ducks. Black duck, green-winged teal, goldeneye, blue-winged teal, wood duck, bufflehead, ring-necked duck, and the three mergansers made up 90% of the annual harvest. Weather and water levels noticeably influence the harvest. Hunter success and species composition are directly affected by weather. Age and sex ratios of the important species in the kill changed as the season progressed.--From summ.

Miers, K. H., F. L. Newcombe, and R. W. S. Cavanagh. SHOOTERS' GUIDE TO NEW ZEALAND WATERBIRDS. Wildl. Branch, Dept. Internal Affairs, Govt. Printer, Wellington, New Zealand. 36 p., illus. 1960. WR 104: 62

The general hunting regulations and the legal status of the waterbirds in New Zealand are discussed. General notes on the waterfowl and clues to their identification are presented.--Stephen V. Goddard.

Mörzer Bruijns, M. F. (R.I.V.O.N., Bilthoven, Netherlands.) DE PUTTING BIJ KLOOSTERZANDE ALS PLEISTERPLAATS VAN KOLGANZEN (ANSER ALBIFRONS). [DE PUTTING (NEAR KLOOSTERZANDE) AS A WINTERING GROUND FOR WHITE-FRONTED GEESE (ANSER ALBIFRONS).] De Levende Natuur 63: 97-103, 3 figs. 1960. WR 104: 62

In Dutch with English summary. Approximately one-fourth of the white-fronted geese wintering in the Netherlands winter at De Putting. A comparison with total numbers from England and Wales, Belgium and Germany is made.--From auth. summ.

Ogilvie, M. A. BRITISH LITERATURE ON EUROPEAN WILDFOWL 1957-1960. 12th Ann. Rept. Wildfowl Trust 1959-1960. p. 157-162. 1961. WR 104: 62

A supplement to Matthews' list (WR 97: 63)--the two bibliographies cover the period 1945-1960.--Stephen V. Goddard.

Philippona, J., and T. Mulder. [ON THE OCCURRENCE OF THE EUROPEAN WHITE-FRONTED GOOSE, ESPECIALLY IN THE NETHERLANDS.] Limosa 33: 90-127. 1960. [From Ibis 103a(2), 1961.] WR 104: 63

Dutch with English summary. The numbers of Anser a. albifrons wintering in the Netherlands have increased considerably in recent years, and now reach 35,000 to 50,000 in Feb.-Mar. To offset the adverse effects of drainage and roadbuilding to this species, the establishment of new reservations is recommended. A survey of the status of this species in Europe, and notes on its migration are included.

Robel, Robert J. (Utah Coop. Wildl. Res. Unit, Logan.) THE EFFECTS OF CARP POPULATIONS ON THE PRODUCTION OF WATERFOWL FOOD PLANTS ON A WESTERN WATERFOWL MARSH. Trans. 26th N. A. Wildl. Conf. p. 147-159, 5 figs. 1961. WR 104: 63

This investigation was conducted on the marsh of a private hunting club located on the delta of the Bear River at the north end of Great Salt Lake, Utah. Four carp enclosures, measuring 50 x 50 feet square, were erected in the summer of 1959 in a portion of the marsh where water depth remained about 12 inches for the entire summer. Twelve more enclosures of identical dimensions were constructed in the same area in the spring of 1960. Each year, carp populations of zero, 200, 400, and 600 pounds per acre were placed in these pens. Vegetative samples were collected from each enclosure at the beginning and end of each season of carp confinement. Water samples were collected from each pen every four days to detect changes in water turbidity. Vegetative productivity, determined by weighing oven-dried samples of vegetation, was negatively correlated with carp population levels. Periodic vegetative surveys showed a strong correlation between areas void of vegetation and carp population levels. No differences in turbidity were detected which could be attributed to carp activity.--Auth. abstr.

Ryder, Ronald A. (Colo. State Univ., Ft. Collins, Colo.) COOT AND DUCK PRODUCTIVITY IN NORTHERN UTAH. Trans. 26th N. A. Wildl. Conf. p. 134-147, 3 figs. 1961. WR 104: 63

Two years of data are presented concerning nesting and young-rearing success of coots and ducks on five study areas on and around Ogden Bay Refuge, Utah. Coots were reduced on two areas to study the effects of coots on duck production. Before treatment the ratio of coot pairs per 100 duck pairs varied from 67 to 225 on the 5 areas. In addition to coots, 7 species of dabblers and 2 species of diving ducks nested on the study areas. Coot nesting densities were greatest on areas with considerable open water in proportion to available nesting cover, whereas duck nesting densities were somewhat greater on areas with a high proportion of cover. Coot nesting success on untreated areas was 94% and 88% for the 2 years (sample sizes of 157 and 161 nests). Dabbling ducks only hatched 9% and 46% (sample sizes of 64 and 24), while diving ducks hatched 58% and 53% (sample sizes of 36 and 34). Coots were persistent renesters, and about 13% of the coot pairs on untreated areas hatched second broods. On a unit-area basis, many more coots than ducks were produced on the untreated areas. Duck production per 100 acres of cover was not appreciably greater on treated areas (coots reduced) than on untreated areas. However, there was greater use by duck broods of the area on which coot hatching was reduced by artificial nest destruction.--Auth. abstr.

Smith, Robert I., and Aelred D. Geis. (Patuxent Wildl. Res. Center, Laurel, Md.) PRE-HUNTING-SEASON BANDING OF MALLARDS AND BLACK DUCKS / PROGRESS REPORT, 1959 AND 1960. US F&WS, Spec. Sci. Rept.--Wildl. no. 60. iii + 29 p. Sept. 1961. WR 104: 63

The progress made in the pre-hunting season mallard and black duck banding program in 1959 and 1960 is summarized. The samples banded at most locations were too small to yield reliable results. Other factors influencing the effectiveness of pre-season banding are: the accuracy of age determinations, the representativeness of ducks banded on refuge areas, and the effects of band collecting activities. A comparison of direct recovery rates indicate that the rate of kill did not differ significantly between 1959 and 1960. Regional and annual differences in the relative recovery rates of immatures and adults were found to exist. Pre-season banding data were used with information from the Mail Questionnaire Survey and Wing Collection Survey to estimate the size, age composition and harvest rate of the pre-season mallard population associated with the Mississippi Flyway.--From auth. abstr.

Stephen, W. J. D. (Canadian Wildl. Serv., Saskatoon, Saskatchewan.) EXPERIMENTAL USE OF ACETYLENE EXPLODERS TO CONTROL DUCK DAMAGE. Trans. 26th N. A. Wildl. Conf. p. 98-111, 4 figs. 1961. WR 104: 64

Objective of experiment carried out near Meadow Lake, Saskatchewan in 1960 was to test use of automatic acetylene exploders as a means of controlling duck damage in a large district. Evidence is presented to show that under conditions in which crops were susceptible to duck damage for about twice the normal period of time there was a reduction in the number of farms damaged by ducks in the study area and that ducks did not move out of the district. In 98 of 141 susceptible fields (69.5%) only one exploder per field was required. --Auth. abstr.

Storozheva, A. M. [SEASONAL DYNAMICS OF THE PRINCIPAL HELMINTH INFECTIONS OF WATERFOWL AND THEIR PREVENTION.] Ptitsevodstvo 7(8): 37-39. 1957. [From Helminthol. Abstr. 30(2), 1961.] WR 104: 64

In Russian.

Timmerman, A. [THE SHELDUCK AS A BREEDING BIRD IN THE NETHERLANDS.] Limosa 33: 159-173. 1960. [From Ibis 103a(2), 1961.] WR 104: 64

Dutch with English summary. "2,500-3,300 pairs of Tadorna tadorna, plus many non-breeders."--I.C.T.N.

Timmerman, A. OVER DE BRANDGANZEN IN NEDERLAND SEIZOEN 1959/1960. [ON THE BARNACLE GOOSE IN THE NETHERLANDS, SEASON 1959-1960.] De Levende Natuur 64: 35-39, 2 figs. 1961. WR 104: 64

In Dutch. About 15,000 barnacle geese winter over in the Netherlands. These geese represent more than 2/3 of the Branta leucopis population of northern Europe.

CRANES, RAILS, SHOREBIRDS

Bailey, Alfred M. DUSKY AND SWALLOW-TAILED GULLS OF THE GALAPAGOS ISLANDS. Denver Museum Nat. Hist., Museum Pictorial no. 15. 32 p., illus. 20 Jan. 1961. $1.00. WR 104: 64

A nicely illustrated account of observations of the dusky gulls (Larus fuliginosus) and swallow-tailed gulls (Creagrus furcatus) endemic to the Galapagos Islands. The author reports on what he believes to be the first recorded observation of a dusky gull's nest and eggs (2). Both species appear to have extremely long breeding seasons.--Howard M. Wight.

Braaksma, S. DE VERSPREIDING VAN DE WULP (NUMENIUS ARQUATA L.) ALS BROEDVOGEL. [THE DISTRIBUTION OF THE CURLEW (NUMENIUS ARQUATA L.).] Ardea 48(1/2): 65-90, 2 figs. 1960. WR 104: 64

In Dutch with long English summary. Surveys made in the Netherlands during 1948-58 yielded an estimate of 2500-3000 breeding pairs of curlews. Curlews are decreasing as a result of the increased cultivation of heath-grounds, moors, and low peaty soils. Breeding pair distribution by habitat was: moors and heathlands, 1200-1400; dunes, 700-800; lowland marshes and grasslands, 300-500. There seems to be a correlation between the groundwater level and the number of breeding pairs of curlews. The need for reserves is stressed--35% of the Dutch curlews are breeding in areas which may be considered nature reserves. The status of curlews in other countries is discussed.

Davis, David E. (Pa. State Univ., University Park.) THE SPREAD OF THE CATTLE EGRET IN THE UNITED STATES. Auk 77(4): 421-424, 1 fig. Oct. 1960. WR 104: 64

Based on a questionnaire survey of bird clubs on the status of the cattle egret in the U. S. By 1956 cattle egrets had appeared from the tip of Texas to Boston. There has been a lack of recent extension--this suggests that the spread of the cattle egret has stopped.

Goetne, Friedrich. (Vogelwarte Helgoland, Wilhelmshaven, Germany.) FELSBRÜTERTUM UND WEITERE BEACHTENSWERTE TENDENZEN BEI DER SILBERMÖWE. [CLIFF-NESTING AND OTHER NOTEWORTHY TENDENCIES OF THE HERRING GULL.] Proc. Intern. Ornithol. Congr. 12: 252-258, 3 figs. 1958 [1960]. WR 104: 65
In German.

Schüz, Ernst, and Joseph Szijj. VOM WEISSTORCHBESTAND IN DEUTSCHLAND 1934 BIS 1958. [THE WHITE STORK IN GERMANY FROM 1934-1958.] J. Ornithol. 102(1): 28-33. 1961. [From Biol. Abstr. 36(19), 1961.] WR 104: 65
[In German.] The population has declined to one-half the number in 1934.--D. E. Davis.

Tuck, Leslie M. THE MURRES / THEIR DISTRIBUTION, POPULATIONS AND BIOLOGY / A STUDY OF THE GENUS URIA. Canadian Wildl. Ser. 1 (Ottawa). 260 p., 34 figs., 19 photos (1 in color). 1960. $2.50, paper. WR 104: 65
This monograph vies with Mayfield's "Kirtland's Warbler" as the most comprehensive ornithological life history study published in North America. It is the culmination of 20 years of research, primarily in Newfoundland. The 5 parts cover evolution and adaptation, distribution and populations, breeding biology, factors affecting population, and economics. World distribution of murres with relation to surface isotherms, marine currents and pack ice is shown in attractive detailed maps. Common murres breed primarily between the 5 C and 15 C surface August isotherms, thick-billed murres between the Arctic ice cap and 15 C. Tuck estimates the world population of murres at 56 million, with the thick-billed predominating perhaps 3 to 1 over the common. "The thick-billed murre may well be the most abundant sea-bird in the Northern Hemisphere." Humans consume about 1 million murres and 2 million of their eggs annually. From 35,810 murres banded in eastern Canada, 568 recoveries (1.6%) have provided information on post-breeding dispersal. Some of the painstaking detail that went into this study is shown by tables of daily changes in percentage of food items fed to young, and daily changes in populations on ten nesting cliffs. Nearly 250 references. Indexes: murres, other vertebrates, selected localities, authorities.--C. S. Robbins.

OTHER BIRDS

Berndt, Rudolf. (Vogelschutzwarte Niedersachsen, Steinkrug/Deister, Germany.) ZUR DISPERSION DER WEIBCHEN VON FICEDULA HYPOLEUCA IM NÖRDLICHEN DEUTSCHLAND. [ON THE DISPERSION OF FEMALE FICEDULA HYPOLEUCA IN NORTHERN GERMANY.] Proc. Intern. Ornithol. Congr. 12: 85-96, 4 figs. 1958 [1960]. WR 104: 65
In German. [The pied flycatcher.]

Dózsa, I. A HÁZIVERÉB (PASSER D. DOMESTICUS), MINT SALMONELLA TYPHIMURIUM-RESERVOIR. [THE SPARROW AS HOST OF SALMONELLA TYPHI-MURIUM.] Mag. Állator. Lapja 16: 144-145. 1961. [From Vet. Bull. 31(10), 1961.] WR 104: 65
[In Hungarian] with summaries in English and Russian. In Budapest Zoo strict control measures failed to eliminate S. typhi-murium infection in birds. The sparrow was considered as a possible carrier. In 266 captured sparrows, S. typhi-murium was isolated from the liver and intestinal tract of 52 birds. Of the infected birds 47 were captured in March, when the birds tended to crowd into the city, while only 5 infected birds were found amongst those captured during Apr.-Sept., when most of the birds invaded grain fields and only "established" sparrows remained.--From abstr. by A. Sebesteny.

Gruzdev, L. V., and G. N. Likhachev. [DATA ON THE NUTRITION OF STRIX ALUCO IN THE NATIONAL FORESTS OF TULA.] Zool. Zhur. 39(4): 624-627. 1960. [From Biol. Abstr. 36(21), 1961, from Referat. Zhur. (Biol.), 1961, no. 7D531.] WR 104: 65
The authors give the results of a study of 490 pellets of Strix aluco in the Tula oblast in 1938-1941. The basic diet throughout the year consists of field-voles (74.3%) and mice (22.1%). In the winter pellets (293), the remains of the common field-vole comprised 74.3%, the bank vole 25.7%; in the spring and summer pellets (197 pellets) 19.1% and 80.9%, respectively. Hence it is surmised that in the winter Strix aluco hunts on the edges of the forest, and in the summer, in its depths. In summer, birds and insects play an essential role in the diet.

OTHER BIRDS--Continued

Harrington, H. J. ADELIE PENGUIN ROOKERIES IN THE ROSS SEA REGION. Notornis 9(2): 33-39. 1960. [From Polar Record 10(69), 1961.] WR 104: 66
"Work done from 1957-58 to 1958-59 seasons."

Piechocki, Rudolph. UBER DIE GROSGEFIEDER-MAUSER VON SCHLEIEREULE UND WALDKAUZ. [THE MOLT OF BARN AND TAWNY OWLS.] J. Ornithol. 102(2): 220-225. 1961. [From Biol. Abstr. 36(19), 1961.] WR 104: 66
[In German.] Two barnowls (Tyto alba), born in June 1957, were kept in a large aviary for several years. The process of wing and tail moult was closely followed and proved to be very complicated.--From abstr.

Ven, J. van der. DE VLIEGENVANGERS ALS BROEDVOGELS IN NEDERLAND. [THE FLYCATCHERS AS BREEDING BIRDS OF THE NETHERLANDS.] De Levende Natuur 64(3): 57-61, 4 figs. 1961. WR 104: 66
In Dutch. The status of spotted, pied, collared and red-breasted flycatchers in the Netherlands.

REPTILES AND AMPHIBIANS

Adler, Kraig K. (2370 Club Rd., Columbus, Ohio.) EGG-LAYING IN THE SPOTTED TURTLE, CLEMMYS GUTTATA (SCHNEIDER). Ohio J. Sci. 61(3): 180-182. 1961. WR 104: 66
A description is given of the egg-laying process by 2 ♀♀ with measurements of the eggs, 8 in one clutch and 3 in the other.--R. W. Dexter.

Damman, Arthur Erle. SOME FACTORS AFFECTING THE DISTRIBUTION OF SYMPATRIC SPECIES OF RATTLESNAKES (GENUS CROTALUS) IN ARIZONA. Ph.D. thesis, Univ. Mich. 105 p. 1961. [Long abstr. in Dissertation Abstr. 22(2), 1961.] WR 104: 66

Hamilton, W. J., Jr., and Joseph A. Pollack. (Cornell Univ., Ithaca, N. Y.) THE FOOD OF SOME LIZARDS FROM FORT BENNING, GEORGIA. Herpetologica 17(2): 99-106. 11 July 1961. WR 104: 66
Percentages and volumes of food are recorded for: Anolis carolinensis, Cnemidophorus sexlineatus, Rumeces inexpectatus, E. laticeps, Lygosoma laterale, Ophisaurus ventralis, and Sceloporus undulatus.

Heatwole, Harold. (Univ. Puerto Rico, Rio Piedras.) HABITAT SELECTION AND ACTIVITY OF THE WOOD FROG, RANA SYLVATICA LE CONTE. Am. Midland Nat. 66(2): 301-313, 6 figs. Oct. 1961. WR 104: 66
During the non-breeding season, wood frogs select habitats that consist of ponds with a forest canopy. Within the range of field observations, more frogs are active at high temperatures and relative humidities than at lower ones. They are sedentary and even during "activity" periods are motionless unless they see a prey item or are disturbed. Escape behavior is described.--From auth. summ.

Horst, J. Th. ter. DE VERSPREINDING DER AMFIBIA EN REPTILIA IN ZUID-LIMBURG. [THE DISTRIBUTION OF AMPHIBIANS AND REPTILES IN SOUTH LIMBURG.] Natuurhist. Maandblad 29(9-12): 105-118, 18 figs. 15 Nov. 1960. WR 104: 66
In Dutch.

Organ, James A. (Univ. Mich., Ann Arbor.) LIFE HISTORY OF THE PIGMY SALAMANDER, DESMOGNATHUS WRIGHTI, IN VIRGINIA. Am. Midland Nat. 66(2): 384-390. Oct. 1961. WR 104: 66

Savage, Jay M. (Univ. Southern Calif., Los Angeles.) EVOLUTION OF A PENINSULA HERPETOFAUNA [SYMPOSIUM: THE BIOGEOGRAPHY OF BAJA CALIFORNIA AND ADJACENT SEAS / PART III. TERRESTRIAL AND FRESH-WATER BIOTAS]. Systematic Zool. 9(3/4): 184-212, 15 figs. Sept.-Dec. 1960. WR 104: 66
A review of the herpetofauna of entire North America occupies first 8 pages. The herpetofauna of Baja California is divided into 4 regions: The Californian subprovince in the coastal and montane northwest; the Colorado Desert district in the northeast; the Peninsular Desert district; and the San Lucan subprovince in the Cape region and north and east of the Cape. The fauna of the Californian,

San Lucan, and Colorado Desert centers differ markedly although relationship is suggested for the first two. The Peninsular Desert area seems to be a transition belt between the San Lucan and Colorado Desert areas.--Mary F. Myers.

Thornton, W. A. (Sam Houston State Teachers Coll., Huntsville, Texas.) POPULATION DYNAMICS IN BUFO WOODHOUSEI AND BUFO VALLICEPS. Texas J. Sci. 12 (3,4): 176-200, 4 figs. Oct. 1960. WR 104: 67

Includes information on possible isolation mechanisms (time of breeding, call, breeding site preference), population structure, movement, population size, longevity, age of sexual maturity, and growth of the 2 species.

Whitaker, John O., Jr. (Cornell Univ., Ithaca, N. Y.) HABITAT AND FOOD OF MOUSETRAPPED YOUNG RANA PIPIENS AND RANA CLAMITANS. Herpetologica 17(3): 173-179. 9 Oct. 1961. WR 104: 67

Wijngaarden, A. van. (R.I.V.O.N., Bilthoven, Netherlands.) OVER DE VERSPREIDING EN DE OECOLOGIE VAN DE ADDER IN NEDERLAND. [ON THE DISTRIBUTION AND ECOLOGY OF THE ADDER IN THE NETHERLANDS.] De Levende Natuur 62: 254-260, 2 figs. 1959. WR 104: 67

In Dutch with summary in English. The distribution of Vipera berus L. in the Netherlands is described for 1903 and for 1958. The viper is restricted to the peat and sandy northeast, central and southern parts of the country and prefers heaths and moors. Factors threatening the species are: reclamation projects, military exercises with heavy material, tourism, and traffic. Recommendations for the protection of vipers are given.--From summ.

INVERTEBRATES

Ehrlich, Paul R., and Anne H. Ehrlich. HOW TO KNOW THE BUTTERFLIES. Wm. C. Brown Co., Dubuque, Iowa. 262 p., 525 figs. 1961. Spiral $2.75, cloth $3.25. WR 104: 67

This is a complete and excellent handbook on butterflies (excepting skippers) of North America, north of Mexico. The illustrated keys and pictured glossary greatly facilitate identification. The amateur who by-passes even the simplified keys and depends upon comparing specimens with figures for identification will find the penned black and white drawings quite satisfactory. They are so well done that color shades can be easily projected into them. Biological notes on each species are brief, but usually include range, number of broods, and food plant of larva. Only a few immature forms are shown and these merely serve as examples of certain families or subfamilies. Common names are given for relatively few species, many familiar ones being omitted. Information on faunal regions and life zones, on methods of rearing, collecting, and preparing and preserving specimens, and on the life cycle and external morphology of butterflies are clearly and concisely presented. The nomenclature used is advanced, following a check list of North American butterflies by C. F. dos Passos which will be published in the near future.--Robert T. Mitchell.

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